



Scottish & Southern
Electricity Networks

TRANSMISSION

Sustainability Report

2022/23



[ssen-transmission.co.uk](https://www.ssen-transmission.co.uk)



A year in highlights



Showing Leadership

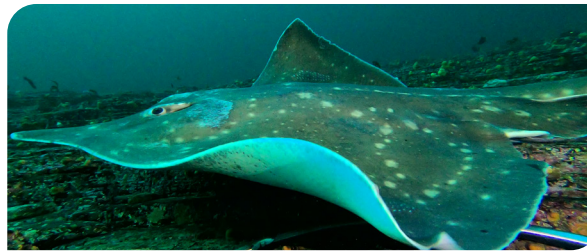


Green finance

We signed our first ever sustainability-linked Revolving Credit Facility, marking a significant step in our business as we continue to grow responsibly and at pace. This form of green finance plays a pivotal role in supporting our expansion efforts, further reinforcing our strong dedication to sustainability.



Working Together



Partnerships

We formed local partnerships with The Orkney Skate Trust, Barnardo's, and Perth Autism Support. Our Orkney Skate Trust partnership focuses on marine habitat restoration for the endangered flapper skate. With Barnardo's and Perth Autism Support, we strive to improve diversity, equity and inclusion to pave the way for our future workforce.



Taking Action



Connections

We made 220 connection offers, an increase of 59 from the previous year. We also achieved a score of 8.6 in the Quality of Connections Survey, securing the top position as the leading Transmission Owner for 2022/23.



Health, safety and wellbeing

We have focused on doing safety differently to create a happy, healthy, and safe workplace. We have developed a new Safety, Health, and Wellbeing Strategy to drive this, and our strategy has four key themes: our communities, reactive to proactive, improved systems, and making it easier to do the right thing.



People

We won the Employer of the Year award at the 2022 Utility Week Awards for our efforts to create an inclusive and engaged workforce. Our Perth Headquarters expanded to hold 500 people, and we achieved Gold membership from The 5% Club's Employer Audit Scheme which demonstrates our investment in apprentices, graduates and degree placement students.



Nature commitments

We supported Argyll and the Isles Coast and Countryside Trust (ACT) with a native broadleaved woodland creation scheme covering 31.5 hectares, on Argyll & Bute Council land near Lochgilphead. ACT is undertaking and managing the works to full woodland establishment. This will provide native woodland for community benefit and enhanced biodiversity.





A year in highlights



Showing Leadership



Innovation

Our collaborative project with Cardiff University, the Condition Assessment of SF₆ Alternatives (CASA), kicked off which aims to grasp condition monitoring needs for alternative gases and aid engineers in spotting initial failures and facilitating repairs. Funding has also been secured for the Network-DC project which aims to prepare DC Circuit Breakers for implementation within Great Britain's energy system.



Pathway to 2030

Ofgem approved our need for strategic electricity transmission reinforcements required to deliver the UK Government's 50GW offshore wind by 2030 target, set out as part of the Accelerated Strategic Transmission Investment framework. We can now move forward with four High Voltage Direct Current links and multiple new 400kV AC and overhead line projects.



Working Together



Sustainable supply chain

We have gathered project-level supply chain sustainability data from 20 projects, covering schemes valued at £500k and above. We have laid the groundwork for improved visibility and a deeper insight into our supply chain, setting the stage for driving our projects' sustainability performance in the times ahead.



Whole system approach

We published an updated Whole Energy System Strategy which takes a wide look at all the elements and systems of the energy industry to make sure we are getting the best value for consumers from investment planning across the transmission network in the north of Scotland.



Taking Action



Project milestones

Significant milestones were reached across our Skye, Argyll, and Orkney projects. Our Final Needs Case Submissions were accepted for the replacement of the Fort Augustus to Skye transmission line and the upgrade of the network in Argyll and Kintyre. In March 2023, we secured preliminary approval for the vital subsea electricity transmission link to Orkney, completing the connection of Scotland's main island groups.



Supporting ambitious plans

We sold a minority stake to Ontario Teachers' Pension Plan to help fund our ambitious investment plans as we continue to deliver a network for net zero across the north of Scotland. SSEN Transmission is now owned 75% by SSE plc and 25% by Ontario Teachers' Pension Plan.





Contents



A year in highlights	
Contents	4
About this report	5
About us	6
About our shareholders	7
Executive summary	8

Sustainability approach	10
Materiality review	11
Emerging trends	12
Sustainability governance	13
Sustainable supply chain	14
Green finance	16

Connecting for Society	18
Tackling Climate Change	21
Promoting a Natural Environment	31
Optimising Resources	39
Supporting Communities	42
Growing Careers	44

Environmental management	49
Sustainability Action Plan performance table	50
Innovation	52
ScotWind and Pathway to 2030 visualisation	53
Scope 3 categories	54
Data	58





PERTH HEADQUARTERS
SSEN TRANSMISSION MOSS WALL



About this report

Ensuring transparent and accountable reporting on progress

This report serves as a comprehensive update on our progress in fulfilling our sustainability commitments outlined in our **Sustainability Action Plan** within the context of our regulatory framework for 2021 – 2026, RIIO-T2.

This report concentrates on performance data for the financial year reporting period from 1 April 2022 to 31 March 2023.





About us

SSEN Transmission is responsible for the electricity transmission network in the north of Scotland. Our responsibilities include the maintenance and investment in the high voltage 132kV, 220kV, 275kV and 400kV electricity transmission network.

Our extensive network consists of underground and subsea cables, as well as overhead lines supported by wooden poles or steel towers, and electricity substations. It extends over a quarter of the UK's landmass, navigating some of the most challenging terrains and powering our communities by providing a safe and reliable supply of electricity. Scotland's transmission network has a strategic role to play in supporting the delivery of the UK and Scottish government net zero targets. We're already a mass exporter of renewable energy, with around two-thirds of power generated in our network area exported south.

Our people are at the heart of our business. As financial year 2022/23 came to a close, our workforce doubled to around 1,300 employees in just two years – a truly remarkable accomplishment. We are dedicated to ensuring our people have the skills, knowledge, and behaviours to manage and develop the transmission network of the future, whilst also retaining the wealth of capabilities necessary to continue to operate our current safe and reliable system.

As the business grows, we are committed to inclusive stakeholder engagement. This is carried out at an 'Advanced' level as assessed by AccountAbility, the international consulting and standards firm.

This report has been prepared by Scottish Hydro Electric Transmission plc (SHE Transmission), operating as SSEN Transmission, in accordance with Special Licence Condition 9.1 (Annual Environmental Report) of SSEN Transmission's licence.

SSEN Transmission encompass the licenced entity Scottish Hydro Electric Transmission Plc Registered in Scotland No. SC213461.





Our shareholders



SSE plc, the UK's clean energy champion, is our main shareholder and holds a 75% majority stake in SSEN Transmission. UK listed and headquartered in Perth, SSE employs over 10,000 talented and skilled people and are real Living Wage and Fair Tax Mark accredited.

SSE's purpose is to provide energy needed today, while building a better world of energy for tomorrow and its vision is to be a leading energy company in a net zero world. In order to achieve this, SSE's strategy is to create value for shareholders and society in a sustainable way through the successful development, efficient operation and responsible ownership of energy infrastructure and businesses.

Sustainability is one of SSE's core values, defined as 'we do things responsibly to add long-term value.'



During 2022/23, we completed a 25% minority stake sale to Ontario Teachers' Pension Plan, an organisation committed to actively creating a positive impact. Their core strategies of Culture, Growth, and Impact guide their efforts to foster a better world while ensuring sustainable investment returns for long-term pension security.

Committed to global sustainability, Ontario Teachers' Pension Plan leverages its capital and influence to expedite the shift towards a net zero world. The organisation has established ambitious targets, aiming to decrease emissions intensity by almost 50% by 2025, with a subsequent two-thirds reduction by 2030. These objectives cover their complete portfolio, encompassing both public and private assets, showcasing the company's dedication to responsible investment practices.





Executive summary

I am pleased to present the second release of our Annual Sustainability Report under the RIIO-T2 price control. Following a year of unprecedented global energy challenges, including the geopolitical conflict between Russia and Ukraine, it's clear that the urgent need to power change in the energy system is gaining momentum amongst businesses, government, and wider society.

At SSEN Transmission, we are committed to fulfilling our ambitious and comprehensive sustainability ambitions to enable a smart, sustainable energy future. To accelerate this vision, in the last year, the business took the strategic step of selling a 25% minority stake to Ontario Teachers' Pension Plan, a credible shareholder known for its commitment to sustainability, and signed its first ever sustainability-linked Revolving Credit Facility which is a form of green finance that aligns our sustainability and financing strategies.

Focusing on our people, we launched a new Health, Safety and Wellbeing strategy to do safety differently which I am incredibly passionate about – our people are at the heart of our business. Evidencing this, we won the Employer of the Year Award at the Utility Week Awards for our efforts to create an inclusive and engaged workforce which has deepened my confidence that we have a bright future ahead of us in SSEN Transmission as we work to deliver a network for net zero.

We have progressed forward with our strategic Pathway to 2030 investments to connect ScotWind and Scotland's remote islands, including enhancing network capacity in regions such as Skye, Argyll, the North East, and the Highlands. Alongside this, we have driven environmental stewardship and achieved no biodiversity net loss on projects granted consent in 2022/23. Eleven major projects yielded a biodiversity net gain of over 10%, and through local partnerships we are also contributing to the growth

of broadleaved woodlands with the Argyll and the Isles Coast and Countryside Trust, all while collaborating with the Orkney Skate Trust to enhance marine biodiversity and safeguard the critically endangered flapper skate. These efforts underscore our approach to leaving a positive, lasting legacy on Scotland's landscapes.

This report not only celebrates our achievements but also acknowledges the path that lies ahead as we work towards fulfilling our sustainability ambitions. This year brought new challenges, with higher than trend leakage from our SF₆ containing assets contributing to our greenhouse gas emissions. However, our emissions rate remains well below the regulatory target set by Ofgem and we are resolutely pursuing our world leading SF₆ avoidance policy and collaborative innovation projects such as the Condition Assessment of SF₆ Alternatives to reduce our own business emissions.

Importantly, the north of Scotland and its vast renewable resources is set to make an outsized contribution to delivering UK and Scottish Government net zero targets. In fact, according to our most recent analysis, nearly a third of the UK's electricity demand could be met by the north of Scotland by 2050. This could enable up to 16% of the total UK greenhouse gas emissions reductions required to achieve net zero by 2050.

Our business plays a critical role in ensuring that current and future generations have access to cleaner, more secure, and affordable energy. I extend my sincere gratitude to our colleagues, local communities, supply chain partners, and wider society for working collaboratively with us as we deliver a network for net zero. As we navigate challenges and opportunities, our commitment to sustainability remains firm.

Rob McDonald - Managing Director



At SSEN Transmission, we are committed to fulfilling our ambitious and comprehensive sustainability ambitions to enable a smart, sustainable energy future.

Rob McDonald
- Managing Director





Our Approach

In this section of the report, an overview of our approach to sustainability is presented. This includes our:

- Sustainability approach
- Materiality review
- Emerging trends
- Sustainability governance
- Sustainable supply chain
- Green finance





Sustainability approach

Sustainability strategy

Our sustainability strategy sets out six strategic ambitions to enable a smart, sustainable energy future.

Our ambitions align to the United Nations Sustainability Development Goals (SDGs) as they represent a global consensus on the priorities for creating a better and more sustainable future for all.

As part of our RIIO-T2 planning process, in 2019, we revised our strategy to ensure that our sustainability approach remains not only relevant, but also effective in addressing the ever-changing landscape of economic, environmental and social challenges.

Sustainability Action Plan

As part of our commitment to sustainability, we developed a comprehensive Sustainability Action Plan (SAP) as an integral part of our RIIO-T2 Business Plan.

Building upon the six strategic ambitions identified in our strategy, our SAP outlines specific outcomes and establishes short, medium, and long-term steps to help us achieve our sustainability goals.

The information is presented in table format in the Appendices section, pages 50-51, while a concise overview of our progress toward achieving our outcomes is found in the Performance section of this report.





Materiality review

Defining the issues that matter

SSE has consistently demonstrated its commitment to understanding its sustainability impacts. However, in 2022, it took a significant step by initiating an independent and comprehensive review of its most significant Environmental, Social, and Governance (ESG) concerns.

For the first time, SSE adopted the 'double materiality' approach, recognising the importance of reporting on sustainability matters that have a material influence on business value as well as the environment and society. This approach provides a comprehensive perspective, considering both SSE's impacts on the outside world and the outside world's impact on SSE. It acknowledges the two-way nature of risks and opportunities, resulting in a thorough consideration of social and environmental issues.

The results of the 2022 materiality exercise

The double materiality assessment identified 21 ESG issues that are considered material to SSE Group. Amongst these, five issues were deemed highly material while three additional areas were identified as opportunities.

SSE's five most material sustainability topics

1	Carbon emissions	These five defined sustainability topics map across to the four United Nations SDGs long identified as being most material to SSE's business activities. Carbon emissions align to SDG 13; sustainable energy generation and affordable and reliable energy both align to SDG 7 and SDG 9 and, finally, supply chains and skills align to SDG 8.
2	Sustainable energy generation	
3	Affordable and reliable energy	
4	Supply chain management	
5	Skilled workforce	

SSE's three opportunities

Stakeholders expressed opportunities for advancing sustainable impact in particular areas such as the just transition, circularity, and nature and biodiversity.

Just transition: Stakeholders acknowledged SSE's current efforts in the just transition but believed SSE could provide continued leadership, potentially creating a cross industry standard to drive progress and further secure long term legitimacy.

Circularity: SSE can further embed circularity principles into its operations and in its value chain through industry collaboration and innovation.

Nature and biodiversity: SSE can take a proactive stance in this field by integrating nature considerations across its value chain, positioning itself as a frontrunner and preparing for forthcoming regulations such as the Taskforce on Nature-related Financial Disclosures.

Why is SSE's materiality assessment important to SSEN Transmission?

SSE's materiality assessment provides a useful picture of what matters most to SSE as a whole, and to stakeholders, and to understand the most material impacts of, and on, SSE.

SSEN Transmission's strategy and action on sustainability continues to be guided by regular assessment of our most material social, environmental, and economic matters. We reviewed our material topics in 2021/22, and we will undertake a full double materiality assessment in 2023/24.

SSE's materiality assessment will help to inform an SSEN Transmission level assessment. In particular, the impacts, topics, trends, and emerging opportunities will all be taken into account as we review our most material matters.





Emerging trends

Our long-term sustainability relies heavily on our ability to recognise and effectively respond to emerging social, economic, and environmental changes. We have identified three key trends that create significant risks and opportunities for our business.

Energy trilemma

The energy trilemma once again came to the forefront, highlighting the ongoing challenges of effectively balancing security of supply, affordability, and decarbonisation. Following Russia's invasion of Ukraine, Europe's heavy reliance on imported gas from Russia has resulted in supply shortages, causing affordability issues and market volatility. In response to this situation, the UK's Energy Security Strategy set a goal of achieving 50GW of offshore wind power by 2030. Furthermore, initiatives such as the Review of Electricity Market Arrangements have been established to decouple renewable energy prices from fluctuations in gas prices.

Our warming world

The Intergovernmental Panel on Climate Change's (IPCC) sixth assessment report, representing eight years of scientific assessment, provides the most comprehensive understanding of climate change to date. It confirms that CO₂ concentrations in the atmosphere are at the highest levels in two million years. To limit global warming to a temporary overshoot and avoid exceeding a 1.5°C increase, immediate and significant reductions in greenhouse gas emissions are necessary. The imperative for the energy supply sector, therefore, is to rapidly connect renewable low carbon power generation to displace conventional sources of generation and in doing so facilitate the drive towards net zero within the UK.

During the year, there were major steps forward in this regard. In 2022, the Electricity System Operator released the Pathway to 2030 Holistic Network Design. Additionally, in December 2022, Ofgem unveiled its Accelerated Strategic Transmission Investment (ASTI) framework. This framework provides regulatory support and approval for a series of strategic investments which aim to connect approximately 11 gigawatts (GW) of offshore wind capacity, from the ScotWind leasing round, by 2030. This is to support the overall ambition of connecting up to 50GW of offshore generation to the GB electricity network by 2030.

Biodiversity focus

The focus on nature and biodiversity at an international level has heightened, resulting in significant strides in biodiversity conservation. One momentous achievement was the historic agreement reached during the United Nations Convention on Biological Diversity in Canada in December 2022. This landmark deal sets a goal to protect a third of the planet for nature by 2030, marking a crucial step forward in preserving our planet's ecological diversity.

In Scotland specifically, the Scottish Government published National Planning Framework 4 which sets out explicit requirements for all developments to contribute to the enhancement of biodiversity. With this new guidance, planning applications will be considered on the grounds of conserving, restoring and enhancing biodiversity so that environments are in a demonstrably better state than without intervention.





Sustainability governance

The current governance structure of SSEN Transmission establishes clear lines of responsibility across the organisation, ensuring that sustainability considerations are integrated into decision-making processes and business strategies.

As part of the SSE Group, we adhere to the guidelines set forth in the UK Corporate Governance Code¹, which ensures the establishment of a well-defined purpose, values, and strategy, accompanied by robust internal controls and practices. This framework allows us to create value for our shareholders while making meaningful contributions to society at large.

During 2022/23, following the minority stake sale, we established new Terms of Reference for the SSEN Transmission Board and Transmission Executive Committee (TEC). This ended our Sustainability Sub-Committee, with responsibilities being assigned to the Board and TEC. The TEC benefits from the ongoing Planet Steering Group which meets monthly on sustainability matters.

The Planet Steering Group, comprising multiple Directors and senior management members, is responsible for overseeing our sustainability strategy, performance, and actions. Our sustainability approach undergoes continuous evaluation for its effectiveness and robustness, adapting as we progress in our sustainability journey.

In relation to this Annual Sustainability Report, independent oversight and challenge have been carried out by Planet Steering Group members and the Network for Net Zero Stakeholder Group. The Network for Net Zero Stakeholder Group provides the business with expert challenge, feedback, and insights on presented topics, with the expectation of contributing to enhanced Stakeholder Engagement outcomes.

¹The UK Corporate Governance Code, published by the Financial Reporting Council, sets out the standards for successful and sustainable corporate governance. Available at: <https://www.frc.org.uk/directors/corporate-governance/uk-corporate-governance-code>





Sustainable supply chain

Achieving our sustainability outcomes and targets requires engagement and collaboration with our supply chain partners at the right time, and in the right way.

Our supply chain is complex and requires a vast amount of stakeholders, contractors, employees, and specialised experts to enable the construction, operation, and maintenance of our transmission infrastructure.

Collaborating in partnership with our supply chain, we procure critical assets and services including High Voltage Direct Current (HVDC) transformers, conductors, insulators, and control systems. Additionally, we closely engage with supply chain members who assist in the delivery of critical and strategically important infrastructure projects.

Collaboration and engagement with our supply chain partners has grown in importance in recent years and will become even more critical in future as we continue to deliver our network for net zero.

Supply chain collaboration: The Powering Net Zero Pact

Following on from the legacy of COP26, SSE initiated The Powering Net Zero Pact (PNZP) with 10 partners, uniting diverse companies across all tiers of the power sector – including civils, shipping, renewables, electrical engineering and others – that are committed to a fair and just transition to net zero carbon emissions.

The PNZP focuses on five areas of ambition: achieving net zero carbon emissions; protecting and enhancing the natural environment; transitioning to a circular economy; guaranteeing fair work and sustainable jobs; and adding value to local communities. In SSE Transmission, our employees contribute to these areas via collaborative Working Groups to drive enhanced sustainability standards through the power sector value chain.

Importantly, we fully encourage our supply chain members and wider organisations involved in the power sector to join the PNZP to accelerate the just energy transition to net zero. To learn more about the requirements, please visit [Powering Net Zero Pact | SSE](#)



Supply chain engagement: Science Based Target (SBT) progress

The number of our suppliers having set a SBT has increased. We are on track to achieving our target of having two-thirds of our supplier base, measured by spend, committed to an SBT by 2025.

Supply chain SBT progress	Unit	2021/2022 ²	2022/23
Total suppliers with or committed to SBTs	%	87	85
Suppliers with set target	%	43	47
Suppliers committed to set a target	%	44	38

² These figures have been corrected from last year's report which presented figures based on the partial year up to December 2021. We now include this KPI in our annual verification process with Planet Mark to avoid similar errors in the future.

It is worth emphasising that, upon submitting their commitment letter, organisations are allowed a 24 month period to finalise and officially submit their SBT. This timeframe ensures that there is opportunity to address the rigorous criteria set by the Science Based Target Initiative.





Sustainable supply chain

Procurement

As part of our procurement process, we have integrated standardised sustainability questions within our registration platform.

During this process, we share our Sustainable Procurement Code along with our Sustainable Procurement Code Supplier Guidance. These documents are included as attachments to the contracts. Since July 2022, all new suppliers are required to sign up to these codes as part of our updated Supplier Onboarding Procedure. The below table indicates the proportion of suppliers adhering to our sustainable code.

	Unit	2021/22	2022/23
Proportion of suppliers adhering to our sustainable code	%	100	100

Embedding sustainability in large capital projects

In April 2022, SSE plc implemented the Sustainability Assessment and Action Plan (SAAP) as an integral part of its Large Capital Projects governance framework. This initiative applies to all significant capital projects, with a value exceeding £10m for SSEN Distribution and £20m for other SSE businesses. The SAAP requires project teams to assess the sustainability impact of their projects across various areas, including whole life carbon, human rights risk, and local economic impact.

Our project teams received support in conducting sustainability workshops to identify the most significant social and environmental impacts associated with their projects. Valuable feedback was received on factors such as resource usability, team capability, and project feasibility. Based on these learnings, updates were made to the SAAP to ensure continuous improvement and incorporation of best practices.



Project reporting

In 2021/22, we implemented the Sustainability Tool, a cloud-based performance management tool, to effectively gather project-level sustainability data from our supply chain partners for all RIIO-T2 projects exceeding £500k in value during the construction phase. At the time of writing, 10 supply chain partners have consistently reported annual and monthly sustainability data for over 20 ongoing projects, providing us with the means to evaluate the impacts of our projects.

The Sustainability Tool has provided us with a structured approach to collect, analyse, and evaluate sustainability data. By systematically tracking specific metrics, we are able to identify areas for improvement and implement targeted strategies that enhance our sustainability practices throughout the construction phase of projects. We aim to gain deeper insights into our supply chain, enhance its sustainability, and improve the overall sustainability performance of our projects.





Green finance

The UK's path to net zero requires significant investment, triggering a transformative shift across all sectors of the economy. The energy supply sector stands at the core of this mission, playing a critical role in enabling net zero.

In 2022, the National Grid Electricity System Operator (ESO) published the Pathway to 2030 Holistic Network Design, which serves as a blueprint for the necessary transmission infrastructure in Great Britain to accommodate the projected surge in renewable energy generation. This plan specifically addresses the ambitious offshore wind targets set by the UK and Scottish Governments for 2030, with aims of reaching 50GW and 11GW respectively, and confirms the need for significant investment in the north of Scotland.

Given this context, the financial services sector's role becomes increasingly vital in facilitating the flow of capital to support the transformation of energy networks. Additionally, there is a growing need to structure these funds in ways that encourage and reward sustainable practices, commonly referred to as 'ESG finance', where Environmental, Social, and Governance factors are considered to measure and account for a business's sustainability impact.

In response to these imperatives, we successfully developed our first sustainability-linked financial product during 2022/23 – a revolving credit facility valued at £750m. This financial solution incorporates a set of ESG metrics, aligning our financing with our commitment to sustainability. The facility is set to provide crucial credit

to support our business expansion and prepare for the integration of renewable, low carbon energy sources onto our network.

Our 4 Key Performance Indicators:

- 1 Reduction in Scope 1 and 2 emissions
- 2 Suppliers setting science-based emission reduction targets
- 3 Capex spend on connecting renewables
- 4 Biodiversity net gain delivery commitments across major terrestrial projects

Each indicator will be evaluated annually as part of our annual sustainability disclosures.

Driving sustainable growth

We are investing over £10bn in the decade leading up to 2030, significantly expanding our portfolio of major capital projects. Our focus is on engaging with diverse landscapes and collaborating with suppliers to deliver sustainable solutions. It is crucial that we align our financial growth with sustainability, avoiding any trade-offs between the two.

This alignment is essential in our journey towards a low carbon energy future. Financial products like the facility serve as excellent examples of how the financial services sector can support this endeavour.



The basket of Key Performance Indicators (KPIs) used in this facility complies with the Sustainability Linked Loan Principles (SLLPs) of the Loan Markets Association (LMA). These KPIs are core, material to our business, and hold high strategic significance for current and future operations. We worked extensively with MUFG, a world-leading bank, who played a pivotal role as the sole Sustainability Coordinator in structuring this facility agreement.





Performance

In this section of the report, our performance updates against our six sustainability ambitions are presented in detail.

- Connecting for Society
- Tackling Climate Change
- Promoting Natural Environment
- Optimising Resources
- Supporting Communities
- Growing Careers

To ensure efficient monitoring of our year-on-year progress, we implement a Red, Amber, Green (RAG) status system. The ensuing definitions are applied to this status system:

R	Progress is at significant risk, and it is highly likely that milestones will be missed
A	Progress is delayed; however it is expected to be achievable before the end of the RIIO-T2 price control period
G	Progress is firmly on track, aligning with implementation milestones





Connecting for Society

Working collaboratively to deliver a whole system solution that promotes affordability, considers societal benefits and supports community renewable connections

Performance at a glance

Theme	Outcome	2021/22	2022/23
Connecting for Society	Transport enough renewable energy through our network to power 10 million homes	G	G

Performance update

In 2022/23, we successfully connected 1.4 GW of renewable energy to our network, primarily due to Seagreen – Scotland's largest offshore wind farm. Our share of low carbon generation increased from 84% to 88%, coinciding with a rise in the number of connection offers made to 220 from 161. Out of these offers, 139 customers accepted, marking a notable increase of 40 compared to the previous year.

Currently, our network has 9.1 GW of renewable generation connected. To ensure we're efficiently connecting generation developments, we prioritise providing an excellent customer experience. In 2022/23, we achieved a score of 8.6 in the Quality of Connections Survey (surpassing our score of 8.1 from 2021/22) and are the top performing Transmission Owner in Great Britain (GB). Introduced in RIIO-T2, this survey is designed to measure customer satisfaction across the full life cycle of connection projects and we are proud to continuously improve our ways of working.

In order to ensure the capability of the transmission system is sufficient to accommodate existing and new generation output in accordance with industry standards for safety and security of supply, we undertake investment defined as Load Related Expenditure (LRE). For the year 2022/23, LRE was £305 million in 2018/19 prices.

	Unit	2021/22	2022/23
New low carbon generation connections	GW	1.1	1.4
Low carbon share of generation	%	84	88
Number of connection offers made ³	Number	161	220
Connection offers accepted ⁴	Number	99	139
Quality of connections ODI score	Score (1-10)	8.1	8.6
Quality of connections ODI target		7.7	7.7

³ All offers were issued within the regulated licensed timescale of 2 months and 14 days

⁴ Does not include Notices or Affected Transmission Owner Connection Offer

Connections reform

Improving customer connections

Ensuring the safe and efficient connection of generation and demand schemes to our transmission network in the north of Scotland is a key responsibility we embrace. In the upcoming years, we have an immense task ahead of us to make sure that our network is capable of connecting the growing onshore and offshore renewable power to support Scotland and the UK's net zero targets alongside securing our future energy by using affordable, home-grown, low carbon electricity.

Our role

The ESO is taking a range of actions to improve the process of connecting onto the transmission grid. We are collaborating with industry partners to improve the connections process. This involves:

- Implementing initiatives outlined in the ESO's five-point plan, such as updating contractual terms, streamlining assessments for construction planning, and reviewing storage connections.
- Actively exploring long-term connections reform with the ESO and industry stakeholders to redefine the connections queue formation.
- Working with the Energy Networks Association's Strategic Connections Groups to enhance coordination between transmission and distribution networks for embedded connections.





Connecting for Society

Whole system approach

To effectively meet the evolving needs of our customers over the next decade and beyond, we must understand which technologies are likely to impact generation and demand profiles. By building on National Grid ESO's Future Energy Scenario's for GB, we have set out our view of a range of potential generation and demand scenarios in our network area from now out to 2050, taking a whole system approach.

In our 2021/22 report, we provided an overview of our North of Scotland Future Energy Scenarios, outlining three scenarios that highlight the significant increase in generation capacity over the coming decades. In 2023/24, we expect to share an update of our analysis as the energy industry evolves and new technologies are established.

To ensure our whole system approach remains robust, we published an updated Whole Energy System Strategy in August 2022 which takes a wide look at all the elements and systems of the energy industry to make sure we are getting the best value for consumers from investment planning across the transmission network in the north of Scotland.



Visit our [Whole System Hub](#) on our website to learn more.

Innovation

As our network grows, we continuously seek innovative ways to solve the challenges that arise in maintaining its safety, resilience, and efficiency.

In pursuit of a balanced portfolio that achieves carbon emission reductions, network and operational efficiency improvements, and prepares our network for the future, we deploy a range of approaches for project discovery and selection. Leveraging Ofgem's Network Innovation Allowance (NIA) and Strategic Innovation Fund (SIF), we have effectively advanced multiple projects that promise enduring, sustainable benefits over the long term.

For additional information regarding our innovation projects, kindly visit the Appendices section within this report. Furthermore, we encourage you to read our [2022/23 Network Innovation Allowance \(NIA\) Report](#), where you can find detailed insights into the progress achieved in our NIA funded innovation projects.

Low Profile 132kV Steel Poles Innovation

Within the next five years, we must provide connections to multiple wind farms characterised by their large electrical capacity or high altitude. A wood pole overhead line (OHL) is unsuitable in these cases as our existing 132kV poles cannot be used above 300m and are capacity limited.

At over 250MW and 300m altitude, where most of the future wind farm connections will be installed, steel lattice and New Suite of Transmission Structures (NeSTS) are the proposed solution; however, they are more costly and have a larger carbon footprint than traditional wooden poles.

This project has researched and designed a new and innovative pole for our OHLs at altitudes above 300m using the new design as an alternative to steel lattice towers across our Transmission network.

For further information regarding the benefits and progress of this project, please visit the Appendices section of this report.

Network-DC Innovation

To meet the UK's increasing energy needs while reducing carbon emissions, the country aims to increase offshore wind capacity from 12GW currently to 40GW by 2030. Direct Current Circuit Breakers (DCCB) are a developing technology with limited information available from the first implementations in China, thus there is a significant risk in adopting the technology.

The Network-DC project will help to de-risk the implementation of DCCBs by further developing industry knowledge and understanding of the opportunities, challenges and timelines from a technical, regulatory and commercial perspective.

For further information regarding the benefits and progress of this project, please visit the Appendices section of this report.





Connecting for Society

Pathway to 2030

This year marked the regulatory approval of the most significant investment package SSEN Transmission has ever seen. We have a plan to connect 11GW of renewable energy, contributing one fifth of the UK Government's 50GW of offshore wind target by 2030.

Our 'Pathway to 2030 Programme' will see us investing £10bn into the north of Scotland's transmission network and in doing so create positive impacts in the economy. The projects contained in this programme include several new onshore reinforcements and subsea links and are part of a major upgrade of the electricity transmission network across Great Britain, required to meet UK and Scottish Government climate change and energy security targets.

Independent analysis carried out by BIGGAR Economics has revealed the substantial economic benefits of the program, fostering thousands of high-value green jobs from entry-level to technical positions, and aiding the transition from oil and gas sectors too. The analysis projects a £6.2bn contribution to the UK economy, with around £2.5bn directly benefiting Scotland. This could create over 20,000 jobs across the UK, including over 9,000 in Scotland.

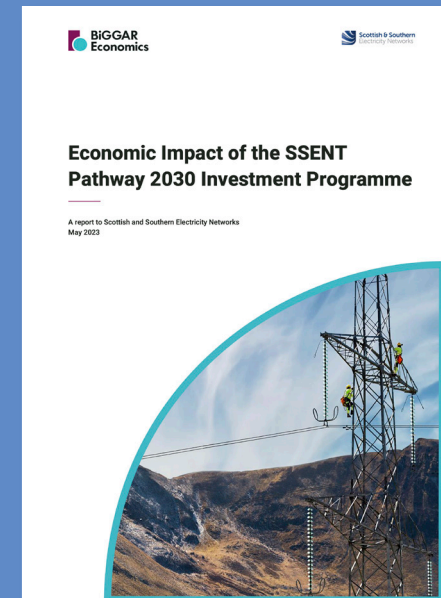
Visit the Appendices section of this report to view an illustrative geographic map of our network area, highlighting ScotWind and our Pathway to 2030 projects.



Find out more about the specific projects by visiting our website:
<https://www.ssen-transmission.co.uk/projects/2030-projects/>



Or watch:
<https://vimeo.com/797365537>



SSEN Transmission's Pathway to 2030 programme is a significant investment into the future of Scotland and the rest of the United Kingdom.

This is a £6.2 billion economic boost for the UK which will deliver long-term and well-paid jobs whilst helping Britain achieve home grown energy security and an electricity network fit for the future.

Graham Stuart
UK Minister for Energy Security and Net Zero





Tackling Climate Change

Managing resources over the whole asset lifecycle to reduce our greenhouse gas emissions in line with climate science and become a climate resilient business

Performance at a glance

Theme	Outcome	2021/22	2022/23
Science based targets	33% reduction Scope 1 and 2 by 2025/26 from an 2018/19 baseline	G	A
Science based targets	Reduce Scope 3 transmission losses emissions intensity 50% by 2029/30 from an 2018/19 baseline	G	G
Science based targets	Full reporting of Scope 3	G	G
Losses	Implement Losses strategy	G	G
SF ₆	Insulation and Interruption Gases (IIG) leakage rate of 0.15% of installed volumes by 2025/26	G	A
Embodied carbon	PAS 2080 certification	A	A
Climate resilience	Update our flood risk assessments in line with best practice	G	G



Performance update

In the second year of the RIIO-T2 price control, we have seen continued progress on our Scope 3 targets, our transmission losses strategy and our climate resilience.

A challenging year for SF₆ leakage has resulted in amber ratings both for SF₆ and for our Scope 1 and 2 emissions target. Embodied carbon is the only area in which we have two consecutive amber ratings. We are making progress in this area and expect to report a green rating next year.





Tackling Climate Change

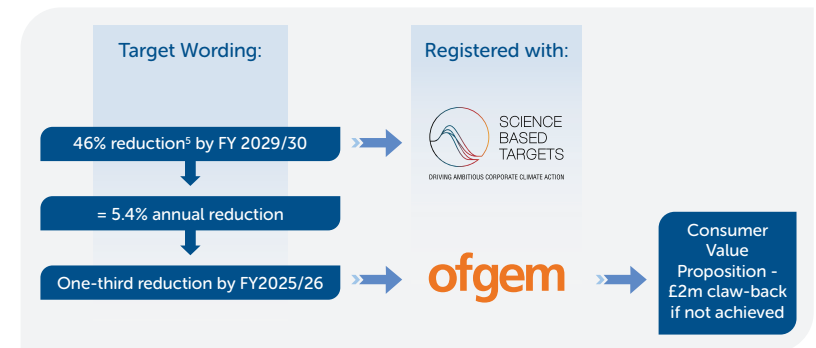
Managing our greenhouse gas emissions

Science Based Targets (SBTs) are recognised as the gold standard for corporate climate action.

It is important for us, as we work to deliver a network for net zero, that our contribution to the clean energy transition is credible and transparent. We have set stretching targets aligned with global scenarios to limit global heating to 1.5°C and the validation of our targets by the Science Based Target Initiative ensures that we are held accountable for our carbon reduction commitments and that our actions are measurable; helping to build trust with stakeholders, customers and our communities.

Our SBT for reducing Greenhouse Gas Emissions (GHG) received official approval in July 2020 and includes three core commitments:

SBT Commitment	2021/22	2022/23
Reduce absolute Scope 1 and 2 GHG emissions 46% by 2029/30 from a 2018/19 base year (33% by end of 2025/26)	11% reduction against baseline	4% increase against baseline
Reduce Scope 3 transmission losses emissions GHG intensity by 50% over the same period	40% reduction against baseline	39% reduction against baseline
Reduce indirect emissions by ensuring that two thirds (67%) of our suppliers by spend will have an SBT by 2024/25	43% of suppliers by spend have set an SBT	47% of suppliers by spend have set an SBT



⁵ Scope 1 and 2 emissions against a 2018/19 baseline

Continued decreases in substation electricity emissions have been outweighed by a large increase in SF₆ emissions, resulting in an increase in Scope 1 and 2 emissions against baseline.

The GHG intensity of our transmission losses shows little change since last year, but we are still broadly on track to meet our 2025/26 target.

On our second Scope 3 target, we have continued to increase the proportion of our supply chain who have set their own SBTs, almost reaching half of suppliers by spend.

Jargon:

A-Z

Scope 1 is direct GHG emissions from our equipment.
 Scope 2 is indirect emissions from electricity use.
 Scope 3 is indirect emissions from everything else, e.g. supply chain.





Tackling Climate Change

Transparently reporting our GHG emissions

We are committed to best practice GHG emissions reporting, in line with the principles set out in the GHG Protocol: Transparency, Relevance, Accuracy, Completeness, Consistency.

The below table showcases our performance from a 2018/19 baseline.



Emissions in tCO ₂ e	Specific Area	Emissions Scope	2018/19 baseline	2019/20	2020/21	2021/22	2022/23
Building Energy Use	Buildings Electricity	2	338	189	112	90	6
	Buildings Natural Gas	1	14	13	7	5	5
	Substation Electricity (estimated)	2	6,262	5,671	5,184	4,796	4,401
Operational Transport	Operational Transport	1	568	520	402	675	795
	Company Vehicles Mileage - Conventional Vehicles	1	347	337	115	136	131
	Company Vehicles Mileage - Electric Vehicles	2	0	0	1	8	23
Fugitive Emissions	IIG Emissions	1	1,925	3,120	2,947	2,777	4,531
Fuel Combustion	Generator Diesel	1	100	69	20	0	42
Total Scope 1			2,954	4,058	3,491	3,593	5,504
Total Scope 2 (Market Based)			6,600	5,860	5,298	4,894	4,431
Total Scope 1 and 2			9,554	9,918	8,788	8,487	9,934

Operational transport only covers emissions from road vehicles. We do not have any Scope 1 GHG emissions from sea or air transport. Fuel combustion emissions from natural gas are listed under Buildings Natural Gas.





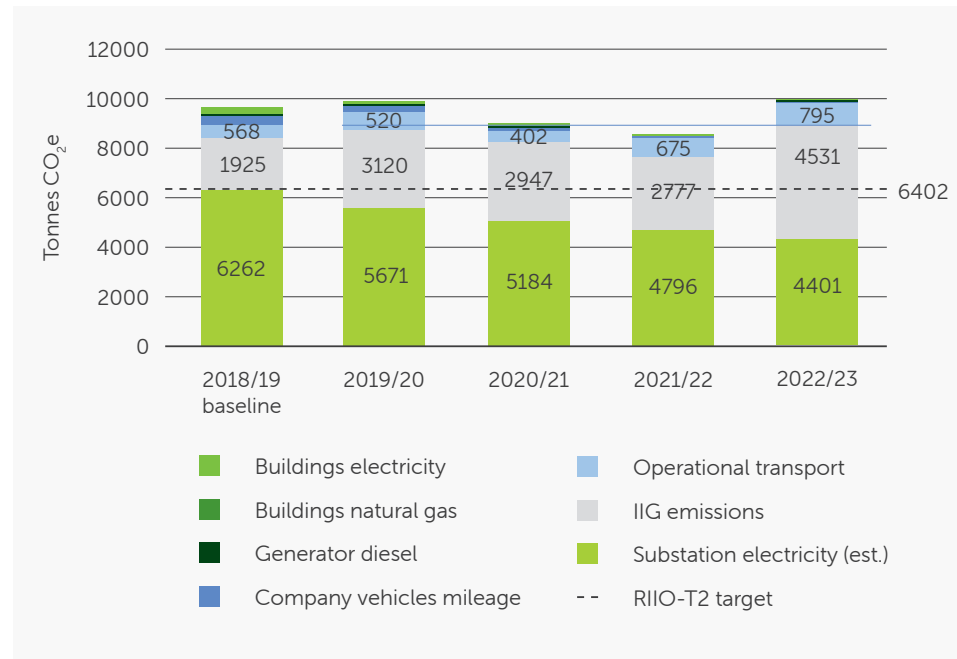
Tackling Climate Change

Transparently reporting our GHG emissions

This year, we worked with Planet Mark to provide an independent assessment of our Business Carbon Footprint (BCF). This verification was undertaken to provide a limited level of assurance in accordance with ISO14064-3:2019, the international standard for GHG reporting.

We continuously improve our methods for carbon emissions reporting. This year, we have improved our substation electricity estimation methodology based on new data from an energy monitoring programme at a selection of substation sites. In addition, we now report mileage undertaken in electric vehicles separately as a Scope 2 emission, rather than being included in Scope 1, reflecting their increased contribution to our BCF.

Both adjustments have been made to previous years' figures as well in order to maintain comparability against the baseline and transparently demonstrate any trends.





Tackling Climate Change

Insulation and Interruption Gas Emissions

To ensure our network operates safely and resiliently, Insulation and Interruption Gases (IIGs) are essential. However, SF₆ the most common IIG, is a potent greenhouse gas with 23,500 times the impact of carbon dioxide. When leaks occur, they have a significant impact on our carbon footprint.

In 2022/23, fugitive emissions of IIGs totalled 4,531 tCO₂e. At 46% of our Scope 1 and 2 total, this is now our largest source of emissions, overtaking substation electricity consumption, and is a big focus of effort for reducing our climate impact. Our leakage rate of 0.29% in 2022/23 is nearer the top end of our historical range, but remains well below the maximum leakage rate (0.38%) specified in our regulatory license and still compares favourably with other GB Transmission Owners' performance.

We have installed 11kg of GE's g³ gas in this reporting period and we continue to apply our SF₆ avoidance policy to all projects. This world-leading policy specifies that we do not install SF₆ on our network where a technically feasible alternative is available.

Improving management of SF₆ alternatives

There is an industry wide knowledge gap in the key features related to condition monitoring of alternative IIGs which may hamper our ability to correctly manage non-SF₆ switchgear. A new research project, supported by Cardiff University and entitled Condition Assessment of SF₆ Alternatives (CASA) will provide full understanding of the condition monitoring requirements for alternative gases to allow engineers to identify an emerging failure and carry out repairs.

IIG Type	Unit	2018/19 SBT baseline	2019/20	2020/21	2021/22	2022/23
Total IIG Emissions	tCO ₂ e	1925	3120	2947	2777	4531
SF ₆	tCO ₂ e	1925	3120	2947	2777	4531
C4-FN-Based Gases	tCO ₂ e	0	0	0	0	0
Vacuum/Clean Air	tCO ₂ e	0	0	0	0	0
Leakage Rate ⁶	%	0.22	0.33	0.30	0.23	0.29
Interventions per annum	Number				27	18
Estimated impact of interventions	tCO ₂ e avoided	Not recorded in previous price control	Not recorded in previous price control	Not recorded in previous price control	111 tCO ₂ e avoided through installing SF ₆ alternatives. 588 tCO ₂ e avoided through leakage reduction	577 tCO ₂ e avoided through leakage reduction

⁶ We have updated our leakage rate (%) methodology to align more closely with the methodologies employed by other network companies. Previous years' figures have been updated for consistency. Additionally, we have refined our estimated impact of interventions to solely encompass tCO₂e avoidance. As a result, wording has been modified for the 2021/22 period.

This change in reporting has no influence on calculations made under SpC 4.3 (Insulation and Interruption Gas emissions output delivery incentive).





Tackling Climate Change

Scope 1 and 2 focus

After IIG emissions, our next two largest categories of Scope 1 and 2 emissions are substation electricity use and transport, at 44% and 10% of our 2022/23 BCF respectively.

Substation electricity use

Our substations consume electricity to power communication and control equipment as well as to provide heating and lighting for staff on site. Emissions per substation have been decreasing over the last five years as the UK power grid has decarbonised. We are also implementing a £16.9m programme of work to install energy efficiency measures and solar photovoltaic generation to bring this consumption down and to further reduce our emissions in this area.

Transport

Emissions from our fleet of operational vehicles and company cars comprise the third-largest part of our operational BCF. In the absence of complete mileage data, we track emissions per vehicle as our progress indicator. This has been falling over time. 37% of company car mileage was in electric vehicles in 2022/23, up from 6% last year and 3% the year before. This is partially counteracted by a 16% year-on-year increase in operational vehicle diesel consumption, reflecting increased activity on the network and the end of any COVID-19 related lockdowns.



	Unit	2018/19 baseline	2019/20	2020/21	2021/22	2022/23
Emissions per substation	tCO ₂ e	50.5	45.0	40.5	37.2	34.1
Change against baseline	%	0	-11	-20	-26	-32
Emissions per vehicle	tCO ₂ e	3.53	3.43	2.09	3.01	2.42
Change against baseline	%	0	-3	-41	-15	-32





Tackling Climate Change

Scope 3 reporting improvement programme

Scope 3 GHG emissions are indirect emissions that occur in our value chain, for which we share responsibility with others. Our largest categories of Scope 3 emissions are capital goods and transmission losses, with purchased goods and services, business travel and employee commuting also being material.

Tackling Scope 3 emissions is dependent on having robust methodologies to calculate our emissions.

This year, we have expanded the scope of our reporting to include standard commercial waste from our non-operational buildings (shared offices, depots, warehouses) as well as hotel stays.

We have also significantly revised our method for estimating emissions from our supply chain, comprising purchased goods and services together with capital goods. By mapping internal procurement categories against Standard Industrial Classification codes published by the Office for National Statistics (ONS), we have been able to apply more specific ONS-published emissions factors to different parts of our spend. In areas where there is no data available, our focus is on enhancing our data collection efforts for greater accuracy and insight.

2022/23 is the first year in which our Scope 3 methodologies were sufficiently robust to be subjected to independent verification. Planet Mark found no evidence to suggest that our emissions calculations are not materially correct and not a fair representation of our BCF.

For further details on our Scope 3 categories, including methodology, assumptions, data sources, data confidence, and applicable improvement actions, please visit the Appendices section within this report.

Our Scope 3 GHG footprint across the GHG Protocol Upstream Categories 1 to 8:

Emissions in tCO ₂ e	Specific area	2021/22	2022/23
Purchased goods and services and capital goods	All other	71,031	61,671
	Water consumption	0.1	0.3
Fuel and energy related activity	Transmission and distribution losses for grid electricity	18	38
	Transmission losses from our network	30,864	42,441
	Upstream/well-to-tank emissions	7,285	8,388
Upstream transportation and distribution		N/A	N/A
Waste generated in operations	Standard commercial waste from non-operational buildings	2.0	3.3
	Wastewater from buildings	0.2	0.6
	Decommissioning and disposal of network assets	No data	No data
Business travel	Rail travel	6	27
	Air travel	126	313
	Ferry travel	2	5
	Hotel stays	No data	184
	Travel in employee-owned private vehicles	159	243
Employee commuting	Commuting emissions	No data	No data
Leased assets		N/A	N/A





Tackling Climate Change

Capital carbon

As an infrastructure provider, a major part of our carbon impact comes from our capital construction programme. We are committed to managing and reducing our capital carbon emissions in line with the principles of PAS2080:2023, the British Standard for carbon management in buildings and infrastructure.

Carbon in construction

Our 2021/22 report gave an overview of our intended approach to reporting and managing our capital carbon emissions over RIIO-T2.

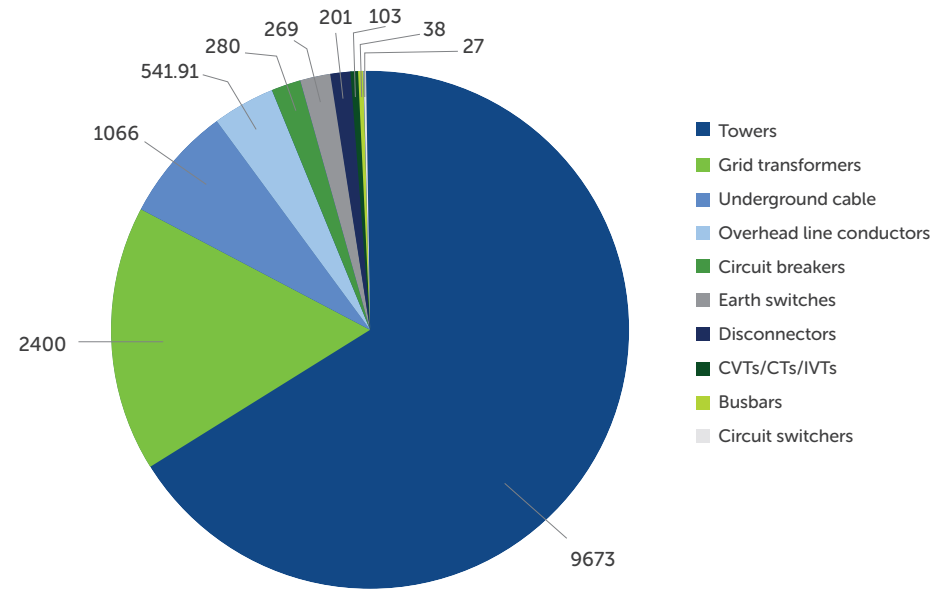
This year we have combined asset-specific emissions factors from the Carbon Asset (CA) database with asset additions data (as reported to Ofgem in our Regulatory Reporting Pack) to estimate the embodied carbon of assets installed on our network during 2022/23. While this does not include emissions from the civil engineering to construct and install assets on site, it still represents a large step forward in our understanding of our capital carbon emissions and is a good use case for the CA database, developed collaboratively with the other Transmission Owners through the UK Reduction of Capital Carbon in Infrastructure Transmission (ROCCIT) group.

Carbon hotspots

Based on this new methodology, our total embodied carbon for 2022/23 is 14,600 tCO₂e. As can be seen in the pie chart to the right, 94% of these emissions come from four asset types: steel towers, grid transformers, underground cables and overhead line conductors. Specifically, the installation of steel towers alone accounts for 66% of these emissions due to the substantial quantity installed, coupled with the relatively high emissions per unit. Breaking down the data by project also shows how 85% of embodied carbon can be attributed to just three projects out of thirteen in total.

Identifying these “carbon hotspots” going forward will help us develop targeted action to reduce our capital carbon emissions.

Embodied carbon by assets installed in 2022/23 (tCO₂e)



Project	Embodied carbon (tCO ₂ e)	% of total	Key assets contributing to embodied carbon
Laig - Loch Buidhe OHL 132kV Reinforcement (Radial)	9,574	66	66 towers and 34km of OHL
Carradale GSP Reinforcement (BAT III & Blary Hill WF Connection)	1819	12	3 x grid transformers
VISTA - Killin Undergrounding	1028	7	14km underground cable





Tackling Climate Change

Transmission losses

For 2022/23, the GHG intensity of electricity on our network, and therefore of our losses, was 0.075 kgCO₂e/kWh. This represents a 39% reduction against our 2018/19 baseline.

We transmitted a record amount of renewable electricity, up 19% year-on-year, but this was counteracted by a 59% increase in gas-fired generation from Peterhead power station, after 3 years of decreases. Given that anomalous market conditions drove electricity generation in 2022/23, we believe we are still on track to achieve our targeted 50% reduction in GHG intensity by 2029/30.

Due to the large increase in losses on the network, along with the flat emissions intensity, our emissions from transmission losses have increased significantly.

Emissions in 2022/23 were 42,441 tCO₂e, a 38% increase compared to the previous year, but still 2% lower than the baseline year.

Emissions from electricity transmission losses are a function of power flows across the UK electricity network, therefore are affected largely by the energy market and the operation of the system. As transmission losses are not in our direct control, we class them as a Scope 3 emission. We have an indirect role to play in reducing the GHG intensity of transmission losses by facilitating the connection of renewable generation on to our network.

Implementing our strategy

Our 2021/22 report provided an overview of our losses strategy. In this second year of the RIIO-T2 price control, we have moved to implement the measures outlined.

Losses are a key part of our conductor selection criteria for overhead lines. We give preference to conductor materials with lower resistive values. For new wind farm connections larger conductor sizes act to reduce losses on the connection circuit. We are also investigating new conductor technologies, such as Aluminum Conductor Composite Core (ACCC). These have been trialed on our Fort Augustus-Fort William and St Fergus-Peterhead reconductoring projects and wider rollout is being considered.

We are also introducing Dynamic Reactive Compensation (DRC) to our network as part of the Kinaradochy and Alyth upgrades, both of which are currently still under construction and expected to connect next year. By providing reactive power locally at the substations DRC reduces the flows through the conductors, resulting in a reduction of losses on the overhead lines.

	Unit	2018/19 SBT baseline	2019/20	2020/21	2021/22	2022/23
Annual Losses ⁷	TWh	0.348	0.414	0.449	0.417	0.564
Share of total electricity	%	1.98	2.05	2.47	2.33	2.75
GHG emissions from transmission losses	tCO ₂ e	43,119	36,357	39,177	30,864	42,441
SSEN Transmission network GHG emission intensity	kgCO ₂ e/kWh	0.124	0.088	0.087	0.074	0.075

⁷ The figures presented here have had substation electricity consumption subtracted to avoid double-counting. This is a minor adjustment: substations are estimated to contribute 23GWh to transmission losses in 2022/23.





Tackling Climate Change

Adapting to the impacts of climate change

Climate resilience

The impacts of climate change will extend to electricity networks, just as they affect all other aspects of civil infrastructure, resulting in physical, societal, and financial implications.

In March 2023, the Climate Change Committee published their 'Progress in adapting to climate change' report to Parliament which highlighted a significant gap in the implementation of adaptation measures within the UK's second National Adaptation Programme. This underscores the importance of scaling up efforts to comprehensively address climate risks affecting cities, communities, infrastructure, the economy, and ecosystems in the country.

Within our business, we prioritise the safeguarding and reliability of our network infrastructure. This involves adequate preparation, response, and recovery from adverse climate events such as floods and storms. By doing so, we enhance our climate resilience and minimise disruptions to our network.

In the 2022/23 period, we conducted comprehensive flood risk assessments at 120 sites within our network. From these assessments, we identified 34 high risk areas that require further evaluation and screening. By completing the flood risk assessments for all 34 sites, we now have the necessary information to determine the most suitable measures for mitigating flood risks in each specific location. This approach allows us to address the unique challenges and vulnerabilities of each site, enabling us to implement tailored strategies for effectively reducing flood risks.

Through proactive assessment and mitigation of flood risks, we are taking significant strides towards strengthening our network against climate-related challenges.





Promoting a Natural Environment

Delivering biodiversity net gain and driving environmental stewardship best practice

Performance at a glance

Theme	Outcome	2021/22	2022/23
Biodiversity net gain	No net loss from 2021/22	G	G
Biodiversity net gain	Net gain from 2023/24 ⁸	G	G
Natural capital	Develop Natural Capital Approach by 2025	G	G
Woodland and forestry	No Net Loss of all woodland cover from 2021	G	G
Visual Impact of Scottish Transmission Assets	Undertake proposals for at least 5 visual amenity projects during RIIO-T2	G	G

⁸ This outcome has been brought forward from 2025/26



Performance update

Climate change and biodiversity decline are pressing issues that profoundly impact the world, and their solutions are intricately linked; tackling one requires addressing the other. Since 2019 we have been recognised as an industry leader on our biodiversity commitments and we have made significant progress in fulfilling our commitments related to environmental impact and natural capital.

In terms of no net loss of biodiversity, all projects that received consent in 2022/23 achieved this goal, ensuring that our operations do not cause any net negative impact on the environment. Regarding Biodiversity Net Gain (BNG), 64% of the projects gaining consent in the same period achieved a net gain greater than 9% over the baseline. Moving forward, all projects will be required to achieve net gain as per the updated planning consent requirements.

In line with our commitment to developing a Natural Capital Approach, we have collaborated with other Transmission Owners to create the EcoUplift toolkit. Further fine-tuning and legal agreements on usage are still required. Additionally, policies, procedures, and a baseline natural capital assessment of our non-operational assets are required for implementation by 2025. For our visual amenity projects, we have identified new potential projects for the RIIO-T2 period and are currently working on their design and Ofgem submissions.

These achievements demonstrate our dedication to minimising environmental impact, promoting natural capital, and enhancing visual amenities throughout our operations.





Promoting a Natural Environment

Biodiversity

As we build and expand our network, we are fully aware of the substantial environmental impacts arising from our activities. With this work comes a responsibility to design and build our projects in a manner which accounts for our impacts on biodiversity. As a result, we have committed to designing biodiversity enhancements in all our projects so that we leave the natural environment in a demonstrably better state than before development started. Our aim is to reduce biodiversity loss, protect vital ecosystem services provided, consider all opportunities for habitat restoration, and strengthen natural ecosystem reliance. We are working towards halting the trend of habitat decline and degradation and transforming how we develop infrastructure in a way that produces tangibly positive impacts for biodiversity.

Throughout the RII0-T2 period, there will be consent gained for around 24 projects, which will achieve positive effects for biodiversity as an outcome of development. This is our opportunity to move from compliance to a leading approach for BNG.

BNG is the act of leaving biodiversity in a measurably better state after development work than the baseline environmental conditions. In order to achieve such enhancements, we have developed an approach to incorporate biodiversity considerations into our project optioneering, design, consenting, development and operational activities.

Transmission specific guidance and toolkits have been informed by the Natural England Biodiversity Metric and assist with the delivery of our BNG targets. A calculation tool has been developed to quantify losses and gains of biodiversity by collecting data on type, area, and condition of the habitat before development work



begins to quantify the baseline biodiversity units. The same tool is used to calculate the biodiversity units for the proposed habitat creation after works. The outcome can be used to assess if we are meeting our biodiversity targets for each development. Regular reviews are carried out and updates made to the guidance to ensure best-practice strategies. Alterations to the SSEN Transmission toolkit have been made to reflect the challenges presented to Scottish habitats and electricity transmission operator specific infrastructure, these include:



- Peatland time to target condition review
- Blanket bog of "good" or "moderate" condition are considered as irreplaceable habitat
- Only assessing direct impacts instead of all habitats present within the red line boundary

We have collaborated with Scotland's Rural College and the Scottish government to provide expertise on developing Scotland-specific BNG tools and guidance and will continue to support important developments to embed BNG within Scotland.





Promoting a Natural Environment

Measuring biodiversity impact: results from 2022/23 projects

All eligible projects which gained consent during 2022/23 have achieved a minimum of no net loss in biodiversity as measured by the SSEN Transmission Biodiversity Toolkit. Seven of the eleven projects achieved greater than a 10% BNG compared to the baseline units, meaning that 64% of projects consented exceeded the business commitment of no net loss.

The specific projects are:

- Beaulieu 132kV Reinforcement
- Cairngorm House, Perth Control Centre
- Creag Dhubh Substation
- Dundee Strategic Spares Warehouse
- Inverness Strategic Spares Warehouse
- Kintore 132kV GIS
- Sloy VISTA Permanent Track (1)

There has been a cumulative increase in 'designed in' area Biodiversity Units of 40.31 resulting in an 16.07% gain from habitat designed in compared to the baseline. The projects also designed in 15.71 biodiversity units of hedgerow, increasing the length of this important habitat.

To compensate for losses associated with the retention of two access tracks for the Creag Riabhach Windfarm connection, support was provided to the Royal Society for the Protection of Birds for the partial removal of a deer fence near their Forsinard Flows nature reserve.



This is to encourage natural browsing which will increase the biodiversity in an area of blanket bog which is part of the "Flow Country". The requirements for offsite delivery of BNG requirements are being combined for Beaulieu Substation, Dundee Warehouse, and Inverness Warehouse to support The Aigas Trust in replanting 13.11 hectares with native broadleaf trees in a community forest near Inverness. Creag Dhubh substation demonstrated the application of the "like for like or like for better" principle where areas of conifer were removed and replaced by native broadleaf planting or natural scrub regeneration. Bracken has been replaced with dry dwarf shrub heath and marshy grassland replaced by semi-improved neutral grassland. By applying BNG, we are leaving the natural environment in a demonstrably better state.





Promoting a Natural Environment

We recognise the importance of collecting data and evaluating the impacts of our project works on biodiversity.

The table below provides a quantitative summary of the biodiversity impacts for eleven of our projects, ranked in descending order according to their overall net gain percentage.

Project name	Baseline Biodiversity Units (Area)	Baseline Biodiversity Units (Hedgerows)	Baseline Biodiversity Units (Watercourses)	Designed In Biodiversity Units (Area)	Designed In Biodiversity Units (Hedgerows)	Designed In Biodiversity Units (Watercourses)	Total unit net change	Overall net gain %
Creag Dhubh Substation	51.47			78		5.74	26.53	51.5
Sloy VISTA Permanent Track (1)	0.58			0.86			0.28	48.3
Cairngorm House, Perth Control Centre	2.9			4.01			1.11	38.3
Dundee Strategic Spares Warehouse	15.09			17.21	3.54		2.12	14
Inverness Strategic Spares Warehouse	16.74			18.92	3.01		2.18	13
Kintore 132kV GIS	37.94	4.65		42.28	6.45		4.34	11.4
Beaully 132kV Reinforcement	19.87	1.96		22.12	2.71		2.25	11.32
Creag Riabhach Windfarm 132kV Overhead Line - Pole 38	0.59			0.6			0.01	1.7
Gills Bay Switching Station	88.16			89.64			1.48	1.68
Creag Riabhach Windfarm 132kV Overhead Line - Pole 37	1.32			1.33			0.01	0.76
Sloy VISTA Permanent Track (2)	6.2			6.2			0	0





Promoting a Natural Environment

Irreplaceable habitat

We understand that certain habitats have been classified as irreplaceable due to the possession of unique features such as antiquity, high species diversity and distinctiveness meaning that restoration or replacement is very difficult if destroyed. In our operational area this includes blanket bog in moderate or good condition, ancient semi-natural woodland (Ancient Woodland Inventory categories 1a and 2a), and ancient and veteran trees. As we develop our transmission network, our work can interact with these sensitive habitats which comes with the responsibility to design our projects in a manner which protects these important features.

In delivering BNG, avoidance and minimisation of impacts should be prioritised by use of the mitigation hierarchy, seeking to avoid areas of irreplaceable habitat wherever possible by recognising these areas as a significant constraint. Where impacts cannot be avoided, compensation is required to offset the resulting development activities to create additional gains for biodiversity. Use of our biodiversity assessment tools help understand our impacts and inform the mitigation process.

Where habitat creation cannot be achieved onsite (challenges with land-ownership control or insufficient area to achieve meaningful enhancements), compensation of losses can take place outside the development boundary, but within the locale of the project. Compensation aims to go farther than environmental reinstatement, but to enhance biodiversity to a better ecological state than the baseline condition. By rigorously following this process, we aim to achieve long-term positive impacts for biodiversity across our operational area in the north of Scotland.





Promoting a Natural Environment

Local environment enhancement

Over the past year, we have supported native broadleaf woodland planting at Borralan woodland. We have also created homes for barn owls, small birds, bats, and pine martens through our substation projects. Additionally, we have funded research into the endangered flapper skate found around the Orkney Islands.

We have allocated more than £2.5 million across our enhancement projects, which is an increase of £1 million compared to last year.



Orkney Skate Trust

We actively promote marine biodiversity alongside our commitment to enhancing onshore biodiversity. Through collaborations with local environmental groups, we strive to expand our knowledge of the marine ecosystem, its impacts, and protect valuable marine species and habitats.

A key partnership is with the Orkney Skate Trust, where we fund their research initiatives and share marine datasets, including 3D bathymetric and side-scan sonar data.

In 2022, we supported their survey work after learning about their pioneering research through Seasearch Scotland. This partnership deepens our understanding of the marine environment, enabling effective measures to preserve and enhance its unique wildlife.

Project	Location	Description of local improvement	Environmental benefits	Timescales
Borralan woodland planting	North of Ullapool	Implementation of 42.5 hectares of native broadleaf woodland planting	<ul style="list-style-type: none"> Biodiversity Climate 	In progress
Achlain planting	Near Dalmally	Establishment of a predominantly broadleaf woodland covering 125 hectares, with a small portion dedicated to commercial trees	<ul style="list-style-type: none"> Biodiversity Climate 	In planning
Orkney Skate Trust	Coastal waters surrounding the Orkney Islands	Conducting underwater video surveys to identify nursery zones of the endangered flapper skate, contributing data for predictive habitat mapping	<ul style="list-style-type: none"> Biodiversity Research Community engagement 	Delivered
Fort Augustus substation	Fort Augustus	Installation of barn owl boxes in close proximity to newly planted woodland, promoting nesting sites and encouraging owls to prey on voles that may pose a threat to the trees	<ul style="list-style-type: none"> Biodiversity 	Delivered
Beaully substation	Beaully	Placement of bat boxes, bird boxes, and a pine marten den within existing woodland near the site, augmenting nesting opportunities for these species	<ul style="list-style-type: none"> Biodiversity 	Delivered





Promoting a Natural Environment

Woodland and forestry

Within our operational area, we are surrounded by vast expanses of woodland, including extensive areas of plantation forestry. Throughout the project development process, we adhere to the mitigation hierarchy. Our first priority is to avoid wooded areas, particularly those classified as semi-natural woodland. If avoidance is not possible, we conduct careful assessment and design to minimise losses, ensuring coordination with existing woodland management plans.

Beyond this, we have committed to achieving no net woodland loss on all projects since 2021 and we plant at least the same area of trees which have been felled. By doing so, we are meeting Scottish Government policy relating to woodland cover and, as the re-planting schemes are predominantly native woodland creation schemes, we are improving biodiversity. By applying BNG, we are leaving the natural environment in a demonstrably better state.



We have partnered with Argyll and Bute Council and Argyll and the Isles Coast and Countryside Trust (ACT) on an ambitious project to create 30 hectares of native woodland in Lochgilphead. Native woodland species are being planted across council-owned land, located mostly around Kilmory, with 30 hectares being delivered through ACT's compensatory planting agreement with SSEN Transmission as part of an upgrade to overhead lines connecting Inveraray and Lochgilphead.

The project is playing a key role in the drive to cut the region's carbon emissions, increase native biodiversity and achieve net zero. As such, the project has been shortlisted for three different awards across the UK, including at this year's RSPB Nature Scotland Awards, the Scottish Green Energy Awards, and the national Utility Week Awards.

Importantly, Argyll's rainforests are a stunning and precious resource. Within SSEN Transmission, we're playing a small part in helping ensure the long-term sustainability of this nationally significant natural asset through our partnership with ACT Argyll and Argyll and Bute Council.





Promoting a Natural Environment

Visual Impact of Scottish Transmission Assets

We have achieved substantial progress across our Visual Impact of Scottish Transmission Assets (VISTA) projects which aim to minimise the visual impact of existing electricity infrastructure on designated landscapes.

We have successfully completed two technical projects within Cairngorms National Park, removing over 12km of Overhead Lines (OHL) around Nethy Bridge and Boat of Garten, along with a non-technical scheme in the Loch Tummel National Scenic Area.

Furthermore, we have also successfully completed a further two projects within Loch Lomond and the Trossachs National Park, resulting in the removal of over 7.3km of overhead lines around Glen Sloy and Glen Falloch.

Our Killin scheme is also nearing completion, with the remaining overhead line infrastructure set to be removed by June 2023.

Boat of Garten – Complete Cairngorms National Park

Removal of 132kV overhead line infrastructure by installing underground cables between Docharn and the substation east of Boat of Garten (removal of 4km OHL).



Glen Falloch – Complete Loch Lomond and Trossachs National Park

Removal of 132kV overhead line infrastructure by installing underground cables between Inverarnan substation and Crianlarich (removal of 4.5km OHL).



Killin – In construction Loch Lomond and Trossachs National Park

Removal of 132kV overhead line infrastructure by installing underground cables to the north of the village of Killin (removal of 7.8km OHL).

Loch Tummel – Complete Loch Tummel NSA

Painting of the 132kV towers visible from the Queens View and implementation of a native woodland planting scheme to blend the towers into the landscape.

Nethy Bridge – Complete Cairngorms National Park

Removal of 132kV overhead line infrastructure by installing underground cables between the substation east of Boat of Garten to the edge of the forestry near Castle Roy (removal of 8.3km OHL).

Sloy – Complete Loch Lomond and Trossachs National Park

Removal of 132kV overhead line infrastructure by installing underground cables on various circuits in proximity to Sloy switching stations (removal of 2.8km OHL).

	Unit	2021/22	2022/23
Removal of overhead lines	km	7.3	3
Non-technical mitigation projects started in year	Number	1	0
Non-technical mitigation projects	£m	0.168	0





Optimising Resources

Managing resources for a circular economy; achieving zero waste to landfill, increasing resource efficiency and using sustainable materials

Performance at a glance

Theme	Outcome	2021/22	2022/23
Resource efficiency	Achieve zero waste to landfill (excluding compliance waste) by the end of the RIIO-T2 period	A	A
Resource efficiency	Achieve a recycling, recovery and re-use rate of >70% across our waste streams by the end of the RIIO-T2 period	A	A
Resource efficiency	Achieve best practice waste reporting by the end of the RIIO-T2 period ⁹	A	A

⁹ This outcome has changed from 1 April 2021 to coincide with related outcome timelines

Performance update

Resource efficiency remains a central area of focus within our business and we remain firm in achieving our specific outcomes.

To this end, we are continually enhancing the availability and quality of our waste data. Our intention is to gradually refine our reporting practices, with a key outcome being the attainment of best practice reporting by the end of the RIIO-T2 period. This marks a shift from our previous phrasing, which specified we would 'establish and implement best practice waste reporting for all waste streams by April 2021'. Our recognition of the need for a longer-term approach drove this adjustment, as we strive for comprehensive best practice reporting.

Last year, we improved our data availability by implementing a supply chain reporting system to collect construction waste data from our projects.

In 2022/23, 10 supply chain partners have reported monthly waste data for over 20 of our projects across the north of Scotland. However, as part of our internal review processes, this data is not yet ready to be shared externally. We intend to report construction waste data for specific projects in 2023/24.

As a result, our reporting figures concentrate on waste data stemming from our shared offices and operational depots, sourced from SSE plc. This mirrors the approach adopted in the 2021/22 period.

By consciously and progressively refining our reporting practices, we are confident that we will achieve our desired outcomes.





Optimising Resources

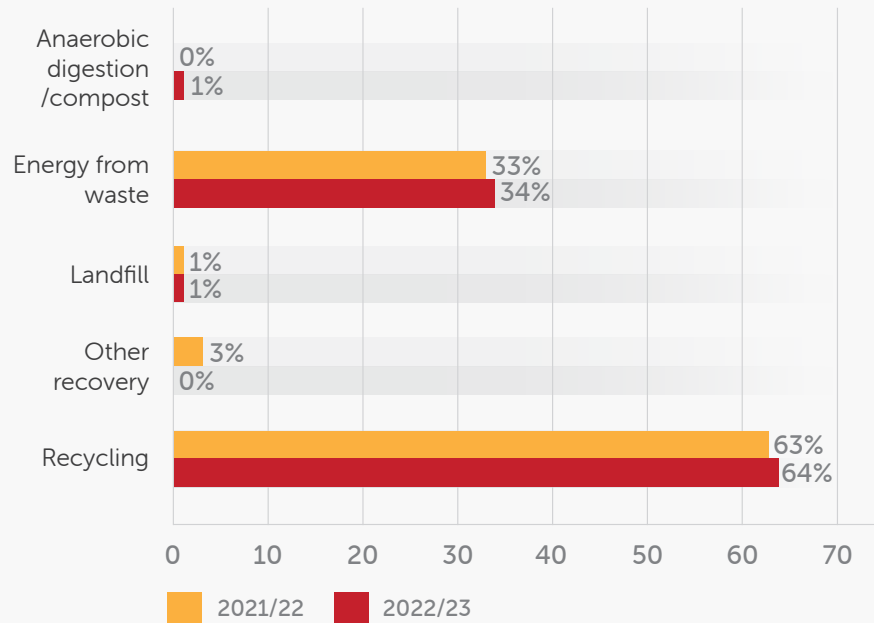
Offices and operational depots

Our reported figures for office and operational depot waste have increased this year due to the inclusion of two new operational depot sites and increased occupancy rates for our shared offices. At our Aberdeen, Glasgow, and Perth offices, occupancy has expanded and there has also been a greater number of staff returning to our offices post COVID-19.

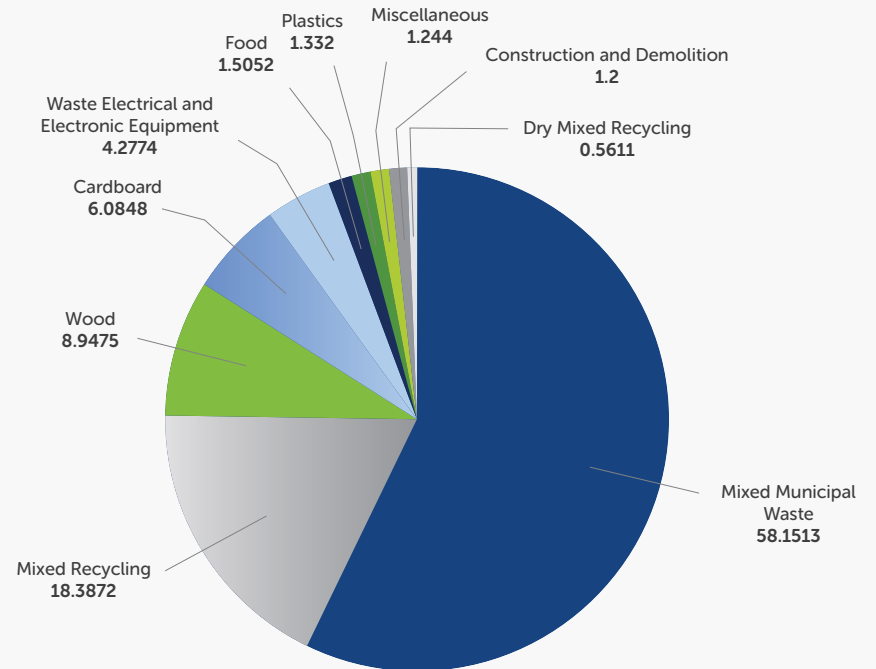
Overall, we generated 172.33 tonnes of waste, diverted 98.6% from landfill and achieved a recycling rate of 64.7%. Our largest waste type from offices and operational sites continues to be mixed municipal waste.

The final destination of total waste by %

We generated 172.33 tonnes of waste, diverted 98.6% from landfill and recycled 64.7%



Our key materials consumed by tonnes





Optimising Resources

Case studies: implementing circular economy principles



Eliminate waste and pollution: reusing wood for community benefit

Our Shetland HVDC Link Kergord site received 1,400 wooden packaging crates for the construction of the HVDC Converter Substation. To address waste and environmental concerns, Hitachi Energy, our Tier 1 Contractor, repurposed these crates due to the logistical challenges and local issues associated with end-of-life materials in Shetland.

Hitachi Energy proactively reached out to the Northmavine Community Development Company, a local charitable organisation focused on promoting economic, social, and cultural well-being, to explore the possibility of reusing the substantial amount of wood, weighing approximately 140.6 tonnes.

This initiative supported various DIY community projects, promoted resource efficiency, waste reduction, environmental sustainability and community engagement. Hitachi Energy are now exploring similar approaches globally for their HVDC projects.



Circulate products and materials

To reduce our consumption of finite and critical resources, we prioritise asset upgrades over replacements whenever feasible. This approach ensures that the network infrastructure maintains the necessary quality and security standards. Over the course of the last year, we have identified reuse opportunities for various projects by carefully tracking and managing our resources and fostering a culture of sustainability throughout our operations.

As a case in point, we have allocated two 275kV Circuit Breakers to our Tealing Substation Extension project and to the Zenobē Battery Connection project. By reusing each asset, we have saved a total of 25.9 tCO₂e (13.0 tCO₂e per circuit breaker).



Regenerate nature: Borralan compensatory woodland planting scheme

Tree planting is currently underway at Borralan, whereby the majority of the existing habitat is of poor quality with low species diversity. The planting process has been carefully designed to ensure a suitable distance from watercourses and to avoid areas of deep peat. In addition, efforts are being made to create open ground spaces that preserve biodiverse areas. This approach will result in a mosaic of habitats, facilitating the establishment of a species-rich woodland in place of the currently depleted moorland.

To ensure the successful establishment of the woodland, a perimeter fence has been installed, effectively excluding deer and other herbivores. Furthermore, in a conscious effort to preserve important cultural heritage features, such as neolithic cairns and stone walls, specific measures have been taken to avoid disturbing or impacting these significant elements.





Supporting Communities

Meeting the needs of vulnerable customers and maximising the local benefit of our investments

Performance at a glance

Theme	Outcome	2021/22	2022/23
Vulnerable consumers	Achieve >95% of our employees trained in supporting vulnerable consumers by the end of 2022	A	A
Vulnerable consumers	Develop and implement partnerships with third parties that can utilise our existing engagement activities to support vulnerable consumers within our communities	G	G
Vulnerable consumers	Implement best practice in accessible communications and media by the end of 2023	G	G
Community engagement ¹⁰	Maintain employee volunteering in the community through the 'Be the Difference' programme during the price control		
Local supply chain	Maintain >25% of approved suppliers located in the north of Scotland	G	G

¹⁰ Due to the evolving landscape, this commitment will be replaced in 2023/24



Stakeholder engagement standard

The AA1000 Stakeholder Engagement Standard is considered the 'gold standard' in stakeholder engagement accreditation. We have maintained our position in the highest 'Advanced' stage of AccountAbility's Maturity Ladder. Our latest performance from 2022/23 represents a 3% increase in our 2021/22 score.

This is a significant milestone, and we are now 9% above the 76% target we set ourselves for the RIIO-T2 price control.

Performance update

We have made great progress in fulfilling our commitments in 2022/23, however there is more work to be done. Currently, more than half of our employees have undergone e-learning specifically designed to support vulnerable consumers. Our intention is to ensure that this is a high priority for all employees to undertake, and we have implemented specific actions to prioritise its importance.

As part of the Transmission Owner Vulnerability Consumer Group, we are actively reviewing ongoing projects to explore collaboration opportunities to support vulnerable consumers within our communities. To accelerate this process, we have increased the frequency of meetings and the Energy Innovation Centre has developed a comprehensive communication plan to support the group's goals and future endeavours.

We have also made substantial progress in fulfilling our commitment to implementing best practices in accessible communications and media. In October 2022, we launched our new SSEN Transmission website and enabled the Recite Me Assistive Toolbar which makes our website digitally inclusive by allowing visitors to customise our content so that they can consume it in ways that work best for them. Furthermore, to raise awareness and promote accessibility, we have actively highlighted the application on our project pages and in external communications, aligning with Global Accessibility Awareness Day 2023.

We are also proud that we have accomplished our commitment to maintaining more than 25% of approved suppliers located in the north of Scotland.





Supporting Communities

Creating lasting, local value for our communities

We are committed to supporting communities across the north of Scotland to create a sustainable and positive legacy.

Given the substantial investment required for our network, we closely engage with all communities and stakeholders interested in our infrastructure developments. Our stakeholders have raised the question of whether a form of community benefit funding could be appropriate, allowing them to share in the value of these developments while benefiting from the economic and employment opportunities they bring.

At the time of writing, we intend to engage with Ofgem and stakeholders to set out plans for our first ever Community Benefit Fund. The aim of this initiative is to recognise the vital role local communities play in hosting the transmission network by providing a source of funds for community-led initiatives that have the potential to change lives. Also, we believe it is essential that we address the needs and aspirations of communities in the north of Scotland.





Growing Careers

Ensuring an inclusive culture for our employees; adding value through good jobs, training and development

Performance at a glance

Theme	Outcome	2021/22	2022/23
A happy, healthy workforce	Continue to manage health and safety by caring for our people – if our employees face challenges with physical or mental health, we will be there to support their well being	G	G
Right people, right skills	Maintain our five-year ahead resourcing plan, supporting by talent pipelines and succession plans that match our forecast business activities	G	G
One inclusive and engaged team	Expand our inclusion and diversity programme, including >95% of employees having received training	G	G
One inclusive and engaged team	Develop a methodology for our pipeline intake to be local diversity representative and implement a target by 1 April 2021	A	G
Empowered inspiration leaders	Work with leaders at all levels to develop their leadership capabilities and encourage and support those who are seeking to move into leadership roles. We are committed to ensuring there are no gaps in leadership potential or practice	G	G



Performance update

Our people are at the heart of our business. As financial year 2023 came to a close, our workforce doubled to around 1,300 employees in just two years – a truly remarkable accomplishment. We want all of our employees to not only be equipped and enabled, but also motivated and inspired as we grow the business.

This year, we have made great progress across our four key people themes.

A happy, healthy workforce

We launched and championed our new Safety, Health and Wellbeing strategy. A detailed overview of our strategy and progress is presented over the next few pages.

Right people, right skills

To ensure we have the right people with the right skills, we have developed a strategic workforce plan to ensure that we have the resource and capability to deliver today and in the future. As an example of our investment in staff members, we joined The 5% Club. The 5% Club is a dynamic movement of employers all of whom are inspired to take positive action for increased, inclusive, and accessible workplace training for all.

We were awarded Gold accredited membership via The 5% Club's 2022-23 Employer Audit Scheme. This award recognises our significant contribution to the continued development of all our employees through "earn and learn" schemes such as Apprenticeships, Graduate Schemes and Sponsored Students Course Placements.





Growing Careers

One inclusive and engaged team

In our pursuit of fostering an inclusive and engaged team, we have directed our efforts towards an engagement and communication strategy that explores new opportunities and methods to attract diverse talent pools throughout the business.

Furthermore, we have partnered with Barnardo's and Perth Autism Support to increase the accessibility for individuals from diverse backgrounds, experiences, and identities who may aspire to join our workforce. We are proud to share our commitment to building an inclusive and engaged workforce was recognised at the 2022 Utility Week Awards in which we won Employer of the Year.

We also opened our new office premises at our Perth Headquarters, which accommodates up to 500 people, to encourage employees to get together in person to collaborate, innovate and communicate.

Empowered inspiration leaders

When it comes to fostering empowered inspirational leaders, we have also successfully implemented a comprehensive Executive Leadership Team program and appointed a dedicated HR partner. Furthermore, we developed specific Leadership competencies to ensure our present and future leaders achieve their potential and in turn create a great working environment for our people.





Growing Careers

A happy, healthy workforce

If it's not safe, we don't do it. This underpins everything we do. As we embark on a significant period of growth, we know we must do safety differently. Our new Safety, Health and Wellbeing strategy comprises four themes and has enabled us to continue putting our people at the heart of what we do to ensure we create a healthy, happy, and safe workplace.

Our communities

Our people and supply chain partners are at the heart of our decision making. To champion our Safety, Health, and Wellbeing strategy, we conducted impactful roadshows across various offices and depots, drawing over 700 participants.

Our inaugural Safety, Health, and Wellbeing Conference in March 2023 gathered around 150 employees, with a specific focus on frontline staff.

Additionally, the successful launch of our Inspiring Safe Communities program aims to bring people in the workforce community together by helping everyone better understand their role and purpose and provide the necessary tools to keep our people safe.

From reactive to proactive

We have taken significant steps to embed wellbeing as the foundation for good safety and health within our business. In 2022/23, we appointed a Health and Wellbeing Manager to look at new ways to do the right thing, be more proactive and invest in our people.

Since this appointment, wellbeing workshops covering 'demands', 'controls', 'relationships', 'change', and 'support' have taken place and should positively affect the health and wellbeing of our workforce. We have covered topics such as bereavement, financial concerns, and gut health, and seen a 156% increase in attendance since the new year. We have also expanded our mental health support by increasing the ratio of mental health first aiders from 1:50 to 1:27, with the goal of reaching 1:10.



Our Safety, Health and Wellbeing strategy





Growing Careers

A happy, healthy workforce

Improved systems

We launched a digital platform for reporting safety, health, and wellbeing risks, enabling simpler incident, observation, and audit reporting, as well as real-time data management. Over 4,500 records have been created since the platform's launch in September 2022, and this platform is accessible to our contract partners to provide a comprehensive safety view.

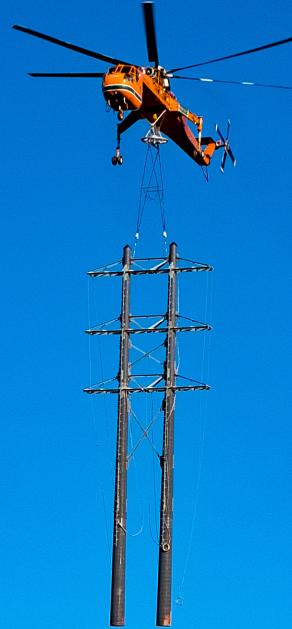
We intend to analyse this data proactively to manage workplace hazards and work towards ISO 45001 approval. Our Operational Safety team has also developed new electrical safe work practices and operational safety procedures, which will be officially launched later in 2023.

Making it easy to do the right thing

We need to better understand what makes our work difficult and why we may drift off course from planned activities. All of the information we gather will support how we make it easier to do the right thing.

To achieve this, we are focusing on a series of initiatives, which include enhancing our authorisation process, simplifying our risk assessment procedures, introducing a new and improved induction process, and launching an updated Transmission Operational Safety Manual. Through these steps, we are committed to fostering a more effective and efficient operational environment.





Appendices

In this section of the report, you will find information pertaining to:

- Environmental management
- Sustainability Action Plan table
- Innovation
- ScotWind and Pathway to 2030 visualisation
- Scope 3 categories
- Data





Environmental management

Oil management

The total oil volume across our transmission network for the year 2022/23 amounted to 4,897,413 litres. This represents an increase of 80,868 litres compared to the previous year, primarily due to network expansion. The reported figures encompass all oil contained in our cables, grid and super grid transformers, and associated reactor set classes.

During this period, we introduced 1,613.5 litres of oil to our transformer/reactor asset classes, while the cable asset class experienced a net increase of 923.0 litres due to losses.

Our overall oil loss rate stands at only 0.051% of the total oil volume installed within each asset class, indicating a 0.032% increase compared to the previous year.

	Unit	2021/22	2022/23
Oil utilised in operational equipment: Cables, reactors, transformers	Litres	4,816,545	4,897,413
Cable oil top up	Litres	0	923
Transformer oil top up	Litres	5,741	1,613.5

Environmental management

We prioritise robust environmental management through the implementation of an ISO14001 certified Environmental Management System (EMS). This system encompasses comprehensive controls, processes, and procedures that span across all our business operations, ensuring their harmonious interaction with the environment.



Environmental incidents

While our commitment is to maintain world-class environmental management, occasional incidents may occur. In such cases, our priority is to respond promptly and responsibly, taking necessary actions to minimise any adverse effects on the environment.

In 2022/23, we had six minor incidents and six serious incidents. No action was required by the relevant regulator.

Incident type	Unit	2021/22	2022/23
Emission to air	Number	1	1
Emission to land	Number	0	4
Emission to water	Number	12	6
Protected species	Number	0	1








Sustainability Action Plan table

Target	Benefit	Interim Milestones			2021/22 Status	2022/23 Status	Comment
		Short term	Medium term	Long term			
 <p>Connecting for Society</p> <p>GB homes powered by renewable energy transported through our network</p>	Decarbonisation of energy and contribution to UK and Scottish net zero targets	Publish an updated North of Scotland Future Energy Scenarios report	On track for delivery of our Certain View investment programme	Delivery of our Certain View investment programme	G	G	Refer to the Performance section of this report, specifically Connecting for Society pages 18-20, for further information
 <p>Tackling Climate Change</p> <p>Reduction in Scope 1 and 2 GHG emissions in line with our SBT</p> <p>Insulation and Interruption Gases (IIG) leakage</p>	Reduction in GHG emissions	<p>Substation Energy efficiency programme developed</p> <p>Complete technical scoping for the installation of EVs charging infrastructure across our network area</p> <p>Action on SF₆ shown below</p>	<p>Energy efficiency measures and EV charging infrastructure rolled out at half of defined substation sites</p> <p>Action on SF₆ shown below</p>	Achieve 33% reduction in Scope 1 and Scope 2 GHG emissions	G	A	Refer to the Performance section of this report, specifically Tackling Climate Change pages 21-30, for further information
	Reduction in GHG emissions	<p>Insulation and Interruption Gases (IIG) Strategy published, and policy updated to minimise SF₆ use</p> <p>Report on tonnes of IIG on network</p>	Report progress against investment programme to install SF ₆ alternatives	Achieve target of 0.15% leakage of SF ₆ by the end of RIIO-T2	G	A	
 <p>Promoting the Natural Environment</p> <p>Projects gaining consent after 1 April 2020 with biodiversity 'No Net Loss' outcomes</p> <p>Investments proposals to improve visual amenity</p>	Protecting biodiversity	Embed Terrestrial BNG procedures into Business as usual and design no-net loss into future projects	Design Net Gain into development projects due to be consented from 2023	Design Biodiversity Net Gain into project applications	G	G	Refer to the Performance section of this report, specifically Promoting a Natural Environment pages 31-38, for further information
	Reducing visual impact	Select new undergrounding projects under VISTA for delivery in RIIO-T2	Detailed VISTA project design and Ofgem application for selected projects	Develop and publish a methodology for assessing assets out with NP/NSA for potential consideration for VISTA in RIIO-T3	G	G	





Sustainability Action Plan table

Target	Benefit	Interim Milestones			2021/22 Status	2022/23 Status	Comment
		Short term	Medium term	Long term			
 <p>Optimising Resources</p> <p>Zero Waste sent to landfill across all waste streams</p> <p>Recycling, recovery and re-use of waste</p>	Minimisation of waste, improved resource efficiency and carbon reduction	Implement supply chain reporting system	Set baselines and improvement actions based on new reporting	External assurance of zero waste to landfill	A	A	Refer to the Performance section of this report, specifically Optimising Resources pages 39-41, for further information
			Implement recycled content reporting across our supply chain	Achieve a recycling rate at or above national targets – 70%	A	A	
 <p>Supporting Communities</p> <p>Employees trained in community vulnerability</p> <p>Approved supplier located in the north of Scotland</p>	Supporting vulnerable consumers	Develop and implement a mandatory e-learning training programme on vulnerable consumers	Business as usual	Business as usual	A	A	Refer to the Performance section of this report, specifically Supporting Communities pages 42-43, for further information
	Local economic benefit	Sustainable Procurement Policy included in key framework contracts	Meet the Buyer events tailored to regional project activity on an annual basis	Review local spend reporting during RIIO-T2 and determine the appropriateness of setting a minimum threshold for the share of local content	G	A	
 <p>Growing Careers</p> <p>Employees trained in inclusion and diversity</p> <p>Pipeline intake is local diversity representative</p>	Increased human capital and inclusion and diversity	Embed our Director accessibility initiative, through roadshows and 'meet and greet' sessions with the Managing Director for all new starts	Deliver an inclusive behaviours programme, including inclusive meeting facilitation training and an online inclusion and diversity hub for all employees	Business as usual	G	G	Refer to the Performance section of this report, specifically Growing Careers pages 44-47, for further information
		Delayed due to the 2021 census being postponed in Scotland	Establish and adopt diversity targets for our new intake based on 2021 census demographics and an increased diversity self-reporting drive	Business as usual	A	G	





Innovation

Innovation	Issue	Annual achievements	Expected benefits	Timescales and next steps
Low Profile 132kV Steel Poles	Within the next five years, we must provide connections to multiple wind farms characterised by their large electrical capacity or high altitude. A wood pole overhead line is infeasible in these cases as our existing 132kV poles are capacity limited. In addition, it takes approximately 200 years to grow a 20-meter wooden pole, or for a replacement to grow to use on our network. At over 250MW and 350m altitude which most of the future wind farm connections will be installed, steel lattice and NeSTS are the proposed alternatives, however, they are associated with high costs and a larger carbon footprint than traditional wooden poles.	Significant progress has been made in the research, design and development of the Low Profile steel poles. They require less steel to be constructed compared to the alternative steel designs. The design also encompasses multiple safety improvements for operatives and removes the need for concrete and access tracks during the construction phase as foundations are directly buried in the soil. Our prototype structures were erected in December 2022 and minor design tweaks were undertaken.	The stronger steel Low Profile Poles remain similar in design to current wooden overhead lines, to ensure there is a limited visual impact on the attractive Scottish landscape. The new steel poles are more resilient in adverse weather conditions, can be used at higher altitudes, and can carry higher loads. This will enable us to increase the current line's capacity without further impacting the landscape or using additional materials. In addition, using the Low Profile Poles design will help to minimise the construction process associated with erecting a lattice tower.	This project began in January 2022. The next steps include: Testing to be conducted on our erected prototypes in Summer 2023: The testing programme will understand the maximum design loads, measure how they react, and assess the combined impact of wind and ice. Erection of first structures on our network in 2024: We have identified future projects across our network to deploy these structures with significant cost savings calculated.
Network Direct Current (DC)	The whole system innovation challenge requires coordination of design to reduce duplication and complexity of networks to deliver an integrated system capable of providing net zero electricity generation. To meet the UK's increasing energy needs while reducing carbon emissions, the country aims to increase offshore wind capacity from 12GW currently to 40GW by 2030. Direct Current Circuit Breakers (DCCBs) are a developing technology with limited information available from the first implementations in China, thus there is a significant risk in adopting the technology. The Network-DC project will help to de-risk the implementation of DCCBs by further developing industry knowledge and understanding of the opportunities, challenges, and timelines from a technical, regulatory and commercial perspective.	During the Alpha phase, we have completed the following work packages: <ul style="list-style-type: none"> Development of open-source DC breaker models. Protection system design and techno-economic evaluation of the DC network switching station for the GB use case. Identified commercial and regulatory obstacles and means to overcome these obstacles. Update the cost-benefit analysis. 	Implementing DCCBs will enable us to connect more offshore wind at lower costs and with a reduced environmental impact. DCCBs can save valuable land space by reducing the number of transmission assets required. Minimising our infrastructure footprint will therefore reduce the impact on local coastal communities. This approach increases the Direct Current (DC) network's flexibility, allowing wind power to be routed more efficiently to centres of demand with reduced constraints and likely reduced curtailment on wind generation. The CBA analysis shows a combined positive benefit of NPV cost-saving accounting for £3 million over the first ten years of operation and £361 million in the expected 45-year lifetime of operation.	Network DC Discovery phase (March 2022 – May 2022): This included an early cost benefit analysis, indicating a positive benefit for GB customers compared to current market practices of Point-to-Point HVDC links for offshore wind farm connections. Network DC Alpha phase completed: August 2022 – February 2023. Network DC Beta phase (if successful) will further develop industry knowledge and understanding of the opportunities, challenges and timelines to deliver DCCBs. Completion of the project will provide a pathway to making DCCBs a viable option for specification and implementation in HVDC network development projects.
OHL Foundation Uplift	OHL design is a complex process with widely varying inputs, and construction costs vary by project, however, indicative costs are £2.346m per km of OHLs. When designing OHL tower foundations, most Transmission Operators specify the adoption of the 'frustum method' which has not substantially changed since the 1920s and has been demonstrated, by initial work undertaken by the University of Dundee, to be, when appropriately factored, generally over-conservative and potentially overestimating foundation volumes. This innovation project aims to provide an uplift capacity of up to 25% in some cases.	Preliminary investigation through numerical modelling has taken place and will undergo further numerical investigation and validation of findings through scaled physical model testing to develop full design approaches and appropriate safety or partial/model factors for implementation. The project is in early-stage development, and work has begun to prepare soil samples for the research work to be undertaken. As the project progresses, additional developments will be reported in future progress reports.	This project aims to provide a saving in embodied carbon and carbon emissions expended during the construction phase by reducing the foundation size and the amount of concrete used to erect OHLs. Considering the use of this method in five SSEN OHL projects of 1,529 towers (suspension and tension), the estimated carbon saving is approximately 1,360 tonnes CO ₂ e equivalent to the annual electricity consumption of over 2,200 households. In addition, if used the OHL foundations will reduce the disruption to the surrounding land from smaller excavations.	This project began in December 2022 and will be live until December 2024. Further work is to be undertaken throughout this project to support the affordability of new renewable generation schemes. This includes the investigation of potential improvements to new foundation geometry to maximise uplift capacity whilst reducing material use and CO ₂ input.





Scotwind and Pathway to 2030

In-flight Investments

- 1. Argyll 275kV strategy
- 2. Fort Augustus to Skye 132kV upgrade
- 3. Orkney 220kV AC subsea link

Pathway to 2030 Investments

- 1a. Beaulieu to Loch Buidhe 400kV reinforcement (BLN4)
- 1b. Loch Buidhe to Spittal 400kV reinforcement (SLU4)
- 2a. Beaulieu to Blackhillock 400kV double circuit (BBNC)
- 2b. Blackhillock and Peterhead 400kV double circuit (BPNC)
- 3. Beaulieu to Denny 275kV circuit to 400kV (BDUP)
- 4. East Coast Onshore 400kV Phase 2 reinforcement (TKUP)
- 5. Spittal to Peterhead 2GW HVDC subsea link (PSDC)
- 6. Peterhead to Drax 2GW HVDC subsea link (E4D3)
- 7. Peterhead to South Humber 2GW HVDC subsea link (E4L5)
- 8. Arnish to Beaulieu 1.8GW HVDC link
- 9. Aquila Pathfinder

- New Infrastructure (Routes shown here are for illustrative purposes)
- Upgrade/Replacement of Existing Infrastructure
- Existing Network





Scope 3 screening categories

Category	Methodology and Assumptions	Data Source	Confidence in Data (Completeness and Accuracy): RAG Rating	Improvement actions
Purchased Good and Services	<p>Purchased goods and services cover cradle-to-gate emissions from any goods or services purchased in the course of normal business operations. Examples include: Office furniture and supplies, IT hardware and software, consumable materials and spare parts, Professional services (consultancy, insurance, legal), etc. Capital goods cover cradle-to-gate emissions from all of our network upgrades and expansion projects.</p> <p>This year we have implemented a new spend based methodology which uses more accurate emissions factors. To obtain appropriate spend-based emissions factors, an exercise has been undertaken whereby each procurement category has been mapped to an appropriate group in the UK Standard Industrial Classification (SIC) of economic activities which is published by the Office for National Statistics (ONS). The ONS publish GHG emission intensities for each SIC group which represent the level of emissions per unit of economic output. We use these as spend-based emissions factors which we apply to total spend for each procurement category in line with the above mapping. GHG protocol guidance recognises that the distinction between purchased goods and services and capital goods can vary from one business to another, the priority is to avoid double-counting between the two sections. As a result, we are aggregating the two categories and reporting capital goods emissions in the purchased goods and services category.</p> <p>The only exception is water consumption for which accurate consumption data and emissions factors are available. We therefore report emissions related to our water supply separately and exclude them from the spend-based calculation.</p>	<ul style="list-style-type: none"> Annual transmission spend data by procurement category ONS greenhouse gas emissions intensity by industry dataset – multiple factors depending on economic activity type Metered water consumption data from non-operational buildings (offices, depots, and warehouses) BEIS Greenhouse Gas Conversion Factors 2021 – Water supply 		<p>In 2022/23 all of the emissions in this category were captured as part of our external data assurance process.</p> <p>Based on recommendations from this process, we will improve the accuracy of our emissions factors by applying the most recent BEIS emissions factors in the next reporting year, as opposed to those provided by the ONS. This will ensure consistency with other reporting categories. We will also look to report emissions from purchased goods and services and capital goods separately.</p> <p>In the latter years of RIIO-T2 we expect to apply a hybrid method which uses emissions factors based on relevant units for our main categories of goods and services.</p>





Scope 3 screening categories

Category	Methodology and Assumptions	Data Source	Confidence in Data (Completeness and Accuracy): RAG Rating	Improvement actions
Capital Goods	See above, combined with purchased goods and services.	<ul style="list-style-type: none"> See above, combined with purchased goods and services 		See above, combined with purchased goods and services.
Fuel and Energy Related Activity	<p>This category covers fuel- and energy-related emissions that are not included in Scope 1 or Scope 2.</p> <p>Transmission & Distribution Losses (T&D)</p> <p>This accounts for the electricity lost between the point of generation and the point at which we consume the electricity in one of our non-operational buildings (offices, depots and warehouses) or to charge company-owned electric vehicles. This category is common to all users of grid electricity and should not be confused with "Transmission losses", which are unique to transmission network operators.</p> <p>Transmission Losses</p> <p>These are the emissions attributable to the energy lost through dissipation between the point at which electricity enters our transmission network and the point at which it leaves our network. The amount of electricity lost in this way is calculated annually by the electricity system operator. The carbon intensity of this electricity is calculated by SSEN Transmission based on the total generation on our network and the carbon intensity of each carbon emitting generation source. Note that substation electricity use, is counted as a Scope 2 emission and is subtracted from the overall losses figure provided by the electricity system operator to avoid double-counting.</p> <p>Well-to-Tank Emissions</p> <p>This accounts for the extraction, production and transportation of the fuels (natural gas, petrol, diesel) consumed by SSEN Transmission. It also accounts for the extraction, production and transportation of fuels to produce the electricity and provide the transport used by SSEN Transmission. This category is linked to a range of other categories across our emissions inventory and changes are driven by multiple factors.</p>	<p>T&D Losses</p> <ul style="list-style-type: none"> Metered electricity consumption data from non-operational buildings (offices, depots and warehouses). BEIS GHG Conversion Factors 2022 – T&D – UK electricity UK electricity T&D for EVs <p>Transmission Losses</p> <ul style="list-style-type: none"> ESO transmission losses value for SSEN Transmission network 2022/23. SSEN Transmission network carbon intensity value (kgCO₂e/kWh) – calculated from total generation on our network and its carbon intensity. BEIS GHG Conversion Factors 2022. <p>Well-to-tank Emissions</p> <ul style="list-style-type: none"> Fuel and electricity consumption data BEIS GHG Conversion Factors 2022 – multiple factors depending on fuel type 		<p>In 2022/23 all of the emissions in this category were captured as part of our external data assurance process. We will continue this approach going forward.</p>





Scope 3 screening categories

Category	Methodology and Assumptions	Data Source	Confidence in Data (Completeness and Accuracy): RAG Rating	Improvement actions
Upstream Transportation and Distribution	Transportation and distribution of goods through third-party suppliers is not a major part of SSEN Transmission's operations. We mainly either transport goods ourselves, emissions from which are counted under Transport in Scope 1, or where third parties are involved, we would account for the emissions under the first two Scope 3 categories: Purchased goods and services and Capital goods	N/A	N/A	N/A
Waste Generated in Operations	<p>This section accounts for third-party disposal and treatment of waste and wastewater. For SSEN Transmission, this would cover emissions associated with standard commercial waste and wastewater from non-operational buildings as well as decommissioning and disposal of obsolete network assets. The latter would form the majority of SSEN Transmission's waste-related emissions, however the data requirements to accurately calculate greenhouse gas emissions from this are complex. We will develop our internal systems to report on this over the course of RIIO-T2.</p> <p>Standard Commercial Waste This category includes emissions associated with standard commercial waste from non-operational buildings (offices warehouses and depots). We have implemented a new waste-type-specific methodology to calculate these emissions. These buildings are generally shared with staff from other SSE business units therefore proportion of standard commercial waste attributable to SSEN Transmission is based on the percentage of the site's floor space occupied by SSEN Transmission staff.</p> <p>Wastewater Treatment We have calculated emissions for wastewater treatment from all of SSEN Transmission's non-operational buildings (offices, depots, and warehouses). These buildings are generally shared with staff from other SSE business units. The proportion of wastewater for a building attributable to SSEN Transmission is based on the percentage of the site's floor space occupied by SSEN Transmission staff.</p>	<p>Standard Commercial Waste</p> <ul style="list-style-type: none"> Waste data categorised by building, waste type (i.e. metal, wood) and treatment method (i.e. recycled, composted). BEIS GHG Conversion Factors 2022 - Waste disposal <p>Wastewater Treatment</p> <ul style="list-style-type: none"> Metered water consumption data from SSEN Transmission's non-operational buildings (offices, depots, and warehouses) BEIS GHG Conversion Factors 2022 - Water treatment 		<p>Over the course of the RIIO-T2, we will continue to improve the accuracy of our commercial waste data from non-operational buildings.</p> <p>The decommissioning and disposal of obsolete network assets is typically carried out by contractors as part of our capital projects and therefore emissions would fall under capital goods.</p>





Scope 3 screening categories

Category	Methodology and Assumptions	Data Source	Confidence in Data (Completeness and Accuracy): RAG Rating	Improvement actions
Business Travel	<p>Business travel covers emissions from staff travel via vehicles over which SSEN Transmission does not have direct operational control. This includes private road vehicles (when used for business travel purposes) and travel via rail, air or ferry services. Emissions associated with SSEN Transmission staff staying in hotels are also included in this category for which a new methodology was implemented in 2022/23.</p> <p>Note that this excludes mileage undertaken in company-owned or leased vehicles which is already counted under Scope 1 – Transport – Business mileage.</p>	<ul style="list-style-type: none"> Employee mileage and travel claim data (with transport modes) Data covering the number of hotel rooms per night occupied by employees BEIS GHG Conversion Factors 2022 – multiple factors depending on travel type and location of hotel stay 		In 2022/23 all of the emissions in this category were captured as part of our external data assurance process. We will continue this approach going forward.
Employee Commuting	Employee commuting covers emissions from staff travel to and from their work locations. We have not reported on these emissions in year 2 of RIIO-T2.	TBD	TBD	Over the course of the RIIO-T2, we will develop systems to collect the relevant activity data and seek to identify accurate emissions factors that would allow us to account for our employees' differing commuting profiles.
Leased Assets	This category covers emissions from leased assets where these are not already covered under Scope 1 or Scope 2 categories. We use an operational control approach to GHG accounting therefore, all assets we operate, regardless of ownership, are part of Scope 1 and 2 reporting.	N/A	N/A	N/A





Data

SSEN Transmission adopts an integrated approach to assurance by utilising both internal audit and external assurance providers to ensure accurate and comprehensive disclosures as necessary. Whenever data has been externally and independently assured, it is acknowledged in the corresponding tables.

SSEN Transmission employs objective reporting criteria to prepare and present independently assured information in this report. The performance measures conform to the established reporting criteria.

Reporting scope and boundaries

While we have previously reported on many areas of sustainability in this report, there are new areas of reporting that have emerged for RIIO-T2 and will evolve over time. We are committed to expanding the scope and boundaries of our reporting to encompass relevant aspects.

Our ambition is to identify the most pertinent and significant scope for each area, considering its material impact. We are dedicated to reporting 100% of the material

scope. To enhance our data reporting, we have established improvement plans and we will provide annual updates on our efforts within our Annual Sustainability Report.

Assurance

All data presented in this report adheres to the Data Assurance Requirements Standard Licence Condition B23. A Risk Assessment was conducted, and the Total Risk Rating was Low. The appropriate level of assurance activities has been employed commensurate with the risk rating including a submission plan, methodology and appropriate level of review and sign off. However, to ensure the accuracy and reliability of this report, we have conducted additional assurance activities, including a Director-level review and sign-off.

Our GHG emissions continue to be a significant impact in our business. As in the previous reporting period, we have subjected our Scope 1 and 2 GHG emissions and transmission loss data to external independent assurance. This year, we collaborated with Planet Mark for this process. For the limited assurance opinion and reporting criteria, please visit our website: <https://www.ssen-transmission.co.uk/>

Data improvement actions

Reporting period	Action	Outcome	Status	2022/23 update
2021/22	Collect project level data on waste, embodied carbon, and other sustainability metrics for our capital projects	To expand the scope of our Scope 3 reporting	On track	Over 20 projects are currently reporting project-level data and we expect this number to increase as more projects reach construction stage
2021/22	Make progress against material areas of our Scope 3 GHG emissions	To advance our progress in mitigating our Scope 3 GHG emissions	On track	We have enhanced our approach to purchased goods and services by adopting a more accurate spending-based methodology, which involves mapping them to the emissions factors provided by the Office for National Statistics. Furthermore, we have included waste data
2021/22	Establish a Natural Capital Tool	To report our natural capital accounts later in the RIIO-T2 period	On track	We have collaborated with other Transmission Owners to create the EcoUplift toolkit. Further fine-tuning and legal agreements on usage are still required





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